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ABSTRACT

In response to America 2000, a federal strategy to achieve the six National Education Goals established in 1989 by the Administration and the nation's governors), communities in all 50 states are actively developing plans and programs. This directory is meant to be a way of sharing information about successful and promising work going on in communities and classrooms across the country. The directory is organized around the National Education Goals; most chapters focus on a key education topic, including early childhood education, dropout prevention, adult literacy, vocational training, and reducing drug abuse. In addition, there are chapters devoted to specific subjects (English--reading, literature and writing; mathematics; science; history; geography; foreign languages). Each chapter generally provides: (1) a brief 4-6 page description of current thinking in a given topic area; (2) a 2-5 page annotated bibliography of some key books, reports, or articles on that topic; (3) examples of promising projects--98 in all--(including name, purpose, brief description, why project is promising, costs, evaluation, and contact information); (4) sources of further information (including name and address of organizations, contact person and a brief description of the organization). (CRW)

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TRANSFORMING AMERICAN EDUCATION

A Directory of Research and Practice To Help the Nation Achieve the Six National Education Goals

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Office of Policy and Planning
U.S. Department of Education
November 1992

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Office of Policy and Planning
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November 1992

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Introduction

...the 21st Century has always been a kind of shorthand for the distant future--the place we put our most far--off hopes and dreams. And today, that 21st century is racing toward us-and anyone who wonders what the century will look like can find the answer in America's classrooms.

PRESIDENT GEORGE BUSH
Launching the AMERICA 2000 Education Strategy

IN 1989, President Bush worked with the Nation's governors to establish six ambitious National Education Goals for the year 2000. These goals call for all children to start school ready to learn; to raise the graduation rate to at least 90 percent; to ensure that all children are competent in core subject areas; for American students to be number one in the world in math and science; for all adults to be literate and able to compete in the modern workplace; and to rid all schools of drugs and violence. In April 1991, the President launched *AMERICA 2000*, a bold and comprehensive strategy to reach the goals, community by community, one community at a time.

Today, more than 2,000 communities in all 50 states have embraced the goals and are developing community-wide strategies to reach them. What are some of the things communities are doing that might help all of us reach these ambitious goals? Is there anything that Cleveland, Tennessee can learn from Cleveland, Ohio, or that Portland, Maine can learn from Portland, Oregon? Are there places to go to get a glimpse of what classrooms might look like in the 21st century?

This directory is meant to be a way of sharing information about successful and promising work going on in communities and classrooms across the country. Work that in one way or another is helping to create the best schools in the world for our children and helping transform our country into a nation of students. The directory is organized around the National Education Goals; each chapter focuses on a key education topic, including early childhood education, dropout prevention, adult literacy, vocational training, and reducing drug abuse, in addition to chapters devoted to specific academic subjects. Each chapter responds to four questions:

1. What is the current thinking in a given topic area—and what practices and programs have been found to be effective?
2. What are some key books, reports, or articles on that topic?
3. Where can innovative and promising projects be found in that topic area?
4. Where can one write or call to get more information on that topic from experts?

Although this directory answers these questions, it is not the last word on any of them; nor is it exhaustive. Rather, it provides a starting point—a place to find the kinds of ideas, reports, projects, resources that can be helpful for all who are seeking to transform education in their state or community.

This a working directory. We plan to update, add to, and improve it in subsequent editions. We hope you will let us know about promising projects, key reports and articles, and resource organizations we missed, using the form provided for this purpose.

Bruno V. Manno
Assistant Secretary for Policy and Planning

America's Education Goals

By the year 2000:

1. All children in America will start school ready to learn.

2. The high school graduation rate will increase to at least 90 percent.

3. American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

4. U.S. students will be first in the world in science and mathematics achievement.

5. Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

6. Every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

Comments, Suggestions, and Ideas

The Department of Education wishes to know whether you found this directory useful, and we invite your comments on how it could be improved. We would also like to know about projects, reports, and organizations that you think should be mentioned in the next issue of this directory.

Please complete this form and mail it to the U.S. Department of Education, Office of Policy and Planning, 400 Maryland Avenue SW, Washington, D.C. 20202-0100.

How did you like the directory?

Was the directory useful ? Yes ___ No ___

Which chapters were the most useful? _____
_____
_____

Which sections were useful?

Current Thinking Yes ___ No ___

Articles and Reports Yes ___ No ___

Promising Projects Yes ___ No ___

Sources of Information Yes ___ No ___

Do you know of a promising project?

Project name _____

Project contact _____

Address _____
_____
_____
_____

Brief project description:

_____
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Do you know of additional key articles and reports that should be cited?

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Do you know of additional key sources of information (organizations or experts)?

Name _____ Name _____
Address _____ Address _____
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Other comments, suggestions, and ideas:

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Your role and interest in education (Check all that apply)

Parent ____
Teacher ____
Principal ____
Researcher ____
Other (Please identify) _____

Name _____
Address _____
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Do you know of additional key articles and reports that should be cited?

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Do you know of additional key sources of information (organizations or experts)?

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Other comments, suggestions, and ideas:

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Your role and interest in education (Check all that apply)

Parent ____
Teacher ____
Principal ____
Researcher ____
Other (Please identify) _____

Name _____
Address _____
_____

Chapter 1

Early Childhood Education

Current Thinking

A major goal of children's early learning experiences is to lay the foundation for success in school and in adult life. High-quality early childhood experiences promote children's physical development, social maturity, emotional adjustment, and ability to learn. They encourage children to learn, and give children opportunities to learn how to communicate better and to solve problems.

The first section of this chapter discusses issues in early childhood education and offers suggestions for improving practice. The second section provides a list of key books, reports, and articles on early childhood education. The third section describes programs that illustrate different approaches to early childhood education. The final section presents a list of resources for further information.

Research Framework

Researchers have attempted to identify indicators of quality in early childhood programs. Studies in the mid-1970s found correlations between children's development and program characteristics such as staff to child ratios, the size of groups of children, and staff qualifications (Divine-Hawkins, 1981; Ruopp et al. 1979).

These studies, as well as many that follow, emphasize the importance of adult-child interactions. For example, recent studies have examined interactions between children and personnel in child care facilities in an attempt to learn how the staff's behavior affects children's development. These studies indicate that adults who are responsive to children's needs, encourage their exploration and play, talk with them and expand their vocabulary, and use positive guidance techniques (e.g., encouraging expected behavior, directing children to acceptable activities, or setting limits) promote children's intellectual, language, and social development (Hayes, Palmer, and Zaslow 1990; Phillips 1989).

Guidelines for Practice

Research in child development provides the groundwork for teaching young children (defined as being from birth to age 8). A strong consensus among early childhood educators supports the report Developmentally Appropriate Practice, issued by the National Association for the Education of Young Children (Bredekamp 1987) and used as the basis for its voluntary accreditation system. In this and other documents, early childhood educators recommend instruction that takes into account children's age and personal qualities and advances children's cognitive, physical, emotional, and social development.

This report and others recommend the following guidelines for early childhood programs:

- The curriculum and structure of early childhood programs reflect and support each child's innate curiosity, abilities, and interests.

- Activities are multisensory, provide hands-on learning with concrete objects, and enable young children to experience the world around them.

- Play is respected as an essential mode through which children learn, develop their abilities to communicate, explore, try out new ideas and experiences, expand their physical and social capabilities, and express themselves.

- Learning is integrated, not divided into isolated subjects. Rather than focusing on mastery of discrete skills, children's learning incorporates skills within meaningful contexts, building on each child's prior experiences.

- The child's day is varied and balanced, with opportunities to work in the whole group in small groups, and individually. Similarly, a mix of child-initiated and teacher-directed activities is offered.

- Language development and reasoning are actively promoted through conversation, questioning, and ample opportunities for children to create stories.

- Parents are involved in supporting their children's development, and communication is encouraged between parents and early childhood educators.

(National Association for the Education of Young Children 1991; U.S. Department of Education 1991; Bredekamp 1987).

Issues Facing Educators

As early childhood programs proliferate, educators are grappling with several issues related to classroom practice, school entry, cultural and linguistic diversity, assessment, staff development, collaboration among agencies, transition from preschool to primary school, and family and community involvement.

Classroom Practice

Pressures from parents, schools, and policymakers for improved student achievement have promoted highly structured, didactic instruction in academic skills for young children, a practice that early childhood professionals question.

Although many endorse a developmentally appropriate approach, some teachers are having difficulty implementing it in the classroom. Teachers who have not studied child development and psychology, or who have taught older children, for example, may not understand how to provide the framework for child-initiated activity, integrated content, and hands-on learning.

Preschool programs for at-risk children help prepare them for school, but there is some controversy about the appropriate approach in preschool programs for at-risk children. Some people believe that a more teacher-directed, didactic approach will help compensate for the structure children do not get at home; others assert that children who lack a rich home learning environment need experiential learning before they can make sense out of the more didactic approaches (Katz 1987; Elkind 1981, 1986).

School Entry

Early childhood professionals generally agree that kindergarten entry should be determined by age only, and that the kindergarten program should seek to meet the needs of each entering child rather than expecting children to conform to a fixed standard (U.S. Department of Education 1991; National Association for the Education of Young Children 1990; Kagan 1990).

In order to prepare children to enter academic-style kindergartens, however, many parents are holding their children out of kindergarten an extra year, schools are instituting extra-year readiness classes before or after kindergarten, and many schools retain children in kindergarten. Researchers argue that these practices can be counterproductive and that they would not be necessary if schools were ready to receive young children (Shepard and Smith 1988; Meisels 1987).

Cultural and Linguistic Diversity

A growing number of children from diverse backgrounds are enrolled in early childhood programs. Soto (1991) estimates that the number of language minority children age 4 and below rose from 1.8 million in 1976 to 2.6 million in 1990. For many of these children, preschool offers their first contact with a language and a culture that are different from those at home. At issue is how to develop early childhood settings that build on the diversity of children's backgrounds, provide appropriate language instruction, and get parents actively involved in their children's learning.

While it is assumed that young children learn languages readily, the research does not necessarily support this view (Hakuta 1986). Some researchers advocate teaching children in their home language so as to support family communication (Wong-Fillmore 1990), others argue that higher-order skills best result from a strong grounding in the first language. Still others, however, affirm the importance of exposing young children to English as soon as possible to prepare them for acculturation within American society (Kagan and Garcia, 1991).

Assessment

To provide accountability for educational programs, policymakers and the public have placed growing emphasis on testing for children of all ages. Even for young children, standardized tests have been used to decide whether they are ready to enter kindergarten or first grade, whether they should be promoted or retained, and whether they should be placed in extra year classes. Yet given the variations in children's growth rates, unpredictable rates of development, and their unfamiliarity with testing, standardized tests have a limited capacity to measure their progress.

Valid standardized tests may be used as a first step in identifying special needs and personalizing instruction. They should, however, be used in conjunction with other sources of information so as to diagnose more completely children's needs and the most appropriate interventions for them (Bredekamp and Shepard 1990; Meisels 1985).

To assess children's progress, ongoing observations by teachers (e.g., using developmental checklists), reports from parents, and samples of children's work offer valid measures. Teachers need extra training and time to learn multiple assessment techniques and use the results to improve instruction (National Association for the Education of Young Children and the National Association of Early Childhood Specialists in State Departments of Education 1991).

The National Education Goals Panel, established by the President and the Governors, is preparing recommendations on developing a national early childhood assessment system. The proposed multidimensional system would include reports from parents and teachers; a profile of children's skills, knowledge, and development; and performance records. It would measure national progress toward readiness rather than testing the readiness of individual children.

Staff Development

The preservice and in-service training of early childhood staff is an issue of growing concern. Research has shown a relationship between the qualifications of child care staff and program quality. Given the variety of delivery systems for early childhood programs, requirements for staff qualifications vary widely. In addition, as preschool programs proliferate, there is concern that the staff for these programs may lack child development and other relevant early childhood expertise. A new project of the National Association for the Education of Young Children called the National Institute for Early Childhood Professional Development is investigating ways to improve the quality of preservice and in-service training and to promote the development of a coordinated delivery system for professional preparation.

Collaboration

Because sponsorship of early education and care programs is so diverse and because young children's needs span multiple agencies, collaboration--among education, social, and health agencies; among preschool providers; and between preschools and elementary schools--is necessary. Depending on the auspices and goals of an early childhood program, it may be subject to federal, state, or local licensing or regulatory requirements, and under the purview of education, health, social services, or other agencies. These multiple jurisdictions have created wide disparities among programs and point to a need to improve coordination and planning at all levels of government (Sugarman 1991; National Conference of State Legislatures 1989).

The evolution of the field has also contributed to its fragmentation. Day care programs serve the children of working parents, fee-for-service preschools provide enrichment activities for middle-class children, and subsidized programs attempt to meet the developmental needs of children from low-income families. Over time, however, the distinctions between day care and preschool have blurred, and today programs compete for children, staff, and facilities. Within local communities, collaboration is needed to help ensure a better match between services and families.

To reduce fragmentation and unproductive competition, a number of states and localities are experimenting with mechanisms for improving collaboration across agencies. Some of these efforts are described in United We Stand (Kagan 1991) and Early Childhood and Family Education (Council of Chief State School Officers 1990). Some examples of strategies for coordination are as follows:

- The establishment of coordinating councils, the creation of a single agency with responsibility for young children, the use of case workers, or the location of different services in one location;

- A network of resource and referral agencies to link families with early childhood providers, and to offer support services for providers within local communities;

- The pooling of resources from multiple funding sources so that children of families with different incomes and needs can be served within the same program;

- o The establishment of links with health and social service agencies and other early childhood providers to help make comprehensive programs possible for disadvantaged children; and

- o Communitywide needs assessments and quality audits.

Transitions into Formal Schooling

There is evidence that intensive, high-quality preschool programs have a positive effect on disadvantaged children, although some effects may diminish after a few years in primary school. Activities designed to improve the transition between preschool and kindergarten are viewed as a way to retain preschool gains. Transition activities aim to improve the continuity of children's experiences.

A recent study (Love, Logue, Trudeau, and Thayer 1992) shows that school-based transition activities are not widespread, but that they tend either to concentrate on coordination and communication, or to involve parents. Some guidelines for improving transitions are as follows:

- o Preschool and primary school teachers should communicate with each other about entering students. They can share health and other records that provide information on children's development and experiences.

- o Joint in-service training for preschool and primary grade teachers helps them understand philosophical similarities and differences, plan developmentally appropriate curriculum and instruction, and ensure that each year builds on children's previous experiences and development. Visits to each other's classrooms will help illuminate teaching styles and goals.

- o Orientations to kindergarten may include opportunities for preschool children and their parents to visit a kindergarten classroom and to talk with their future teachers.

- o Transition activities should not be one-time events, but part of an ongoing plan to help children and their families move into new experiences.

- o Special efforts are required to link preschool and primary school experiences when programs are not located in the same building, and when they are under different sponsors (e.g., public schools, Head Start, community day care).

Transition programs that strengthen the ties between preschool and kindergarten are being expanded by a new Federal grant program administered by the U.S. Department of Health and Human Services (HHS), and by collaborative activities between HHS and the Department of Education. It is hoped that more attention to early transitions will help sustain benefits for children beyond preschool.

Family and Community Involvement

At no time are parents more important in a child's life than in the early years. Parents are responsible for their children's well-being and development. Children's health, attitudes, values, self-image, and understandings are initially shaped by their families. Family life also forms the core of emotional and social development.

Research on the importance of ongoing family involvement in the education process (Powell 1989; Henderson 1988) has fueled a movement to develop strategies for engaging parents in their children's

education and offering support to families. Some of these strategies are grounded in a community-wide awareness that when children enter school ready to succeed, the benefits are enjoyed by communities as well as families. For this reason, many parent involvement programs are founded on a local commitment to bolster family life through quality services (National School Readiness Task Force 1991).

Successful early childhood programs nearly always contain a strong parent involvement component. Recommendations for effective parent involvement programs include the following:

- Child care staff and teachers should view parents as partners in the learning process. They should respect family values and the unique knowledge that parents have about their children.

- Ongoing communication with parents and a welcoming attitude on the part of the early childhood staff are essential to successful parental involvement. Inviting parents to drop in on early childhood programs is important when children may be leaving their family's care for the first time.

- Educators should seek to get parents involved in their children's education in order to help the educators understand the child, to gain the parents' support for program goals, and to elicit parents' help in fostering learning at home. Programs that help parents and children learn together, improve parental skills, and provide support through, for example, referrals to health and social services, are growing in popularity. Among these are family literacy programs, which involve parents and their young children in educational activities.

- Family involvement programs should be multifaceted and flexible, offering parents multiple opportunities for participation. With more women in the labor force and increasing numbers of single parents and parents with limited English proficiency, the old patterns of parental involvement are giving way to more varied, flexible modalities that go beyond traditional notions of volunteering in the classroom and attending parent-teacher conferences.

- Home visits, group meetings, parent-child classes, and opportunities for parents to volunteer or work in the classroom offer different formats for participation (Goodson, Schwartz, and Millsap 1991).

  -- Home visits are particularly useful in working with disadvantaged parents who feel uncomfortable in school settings or who lack the social skills necessary for group participation. By meeting the parents on their home grounds, the visitor may be in a good position to establish a reciprocal relationship with parents. Furthermore, home visitors have an unparalleled opportunity to understand the child's home environment and offer suggestions for making it more conducive to learning.

  -- Group meetings provide opportunities for parents to learn from one another as well as from experts. For isolated parents, meetings offer important social supports. Depending on the population being served, the meetings may take place in the preschool facility or in a local church, community center, or school.

  -- Parent-child classes allow early childhood specialists to observe parents and children together and to make suggestions for improving their interactions. Sometimes the child's enthusiasm for "school" helps to motivate the parent as well.

- Programs that serve disadvantaged families sometimes employ local community members as family workers or classroom aides. Because they are likely to share the parents' values, language, and community, such aides have the potential for developing a strong rapport with family members.

Summary

High-quality early childhood programs will incorporate the best available thinking on curriculum, instruction, and assessment; enhance coordination across early childhood programs and agencies that are concerned with children's well-being; build smooth transitions for preschool children and their parents as the children enter formal schooling; and encourage parents to become actively involved in their children's development. In so doing, they will nurture each child's intellectual, physical, social, and emotional development so as to lay the foundations for success in school and in adulthood.

Suggested Reading List

Bredekamp, S. 1987. Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8. Washington, DC: National Association for the Education of Young Children. Recommends policy and practice in early childhood education.

Bredekamp, S., and L. Shepard. 1990. "How Best to Protect Children from Inappropriate School Expectations." Young Children (March): 14-24. Offers recommendations and bibliography on assessment practices.

Bryant D., R. Clifford, and E. Peisner 1991. "Best Practices for Beginners: Developmental Appropriateness in Kindergarten." American Education Research Journal, 28(4): 783-803.

Council of Chief State School Officers. 1990. Early Childhood and Family Education. Orlando, FL: Harcourt Brace Jovanovich, Inc., 1990. Includes background essays, examples of programs and efforts to offer comprehensive services, and policy recommendations for states seeking to implement early childhood and family education programs.

Divine-Hawkins, P. 1981. Family Day Care in the United States: National Day Care Home Study Executive Summary. DHHS Publication No. 80-30287. Washington, DC: Department of Health and Human Services. Describes family day care programs in three large urban sites.

Early Childhood Research Quarterly. Ablex Publishing Corporation. Journal of research and policy in early childhood education.

Elkind, D. 1987. Children and Adolescents: Interpretive Essays on Jean Piaget. New York: Oxford University Press. Offers a contemporary view of developmental theory.

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Goodson, B., J. P. Swartz, and M.A. Millsap. 1991. Working with Families: Promising Programs to Help Parents Support Young Children's Learning. Washington, DC: U.S. Department of Education 1991. Presents experience from 17 programs that work with disadvantaged families to get them more fully involved in their children's education.

Hatch, A., E. Freeman. 1988. "Who's Pushing Whom? Stress in Kindergarten." Phi Delta Kappan 70(2):145-47.

Hakuta, K. 1986. Mirror of Language. The Debate of Bilingualism. New York: Basic Books.

Hayes, C.D., J.L. Palmer, and M.J. Zaslow. Who Cares for America's Children? Child Care Policy for the 1990s. Washington, DC: National Academy Press, 1990. Summarizes research on the effects and quality of child care, describes the current system, and makes recommendations.

Henderson, A. 1988. "The Evidence Continues to Grow." National Committee for Citizens in Education, unpublished paper. Examines research on parental involvement.

Kagan, S.L. 1990. "Readiness 2000: Rethinking Rhetoric and Responsibility." Phi Delta Kappan, 72(4):272-79. Discusses the meaning of readiness and related issues.

_____. 1991. United We Stand: Collaboration for Child Care and Early Childhood Services. New York: Teachers College Press. Analyzes the meaning and evolution of collaborations to deliver early childhood services and presents promising approaches.

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Examples of Promising Projects

Early Childhood Family Education (ECFE)

Purpose: To strengthen families and help all parents to provide the best possible environment for the healthy growth and development of their children.

Description: The Early Childhood Family Education program recognizes that families provide children's first and most important learning environment and that parents are children's first and most significant teachers. The ECFE program is intended to serve all Minnesota families with children from birth to five years old. The program is currently available in 380 Minnesota school districts. The typical includes the following elements:

- o Parent discussion groups
- o Play and learning activities for children
- o Parent-child activities
- o Special events for the entire family
- o Home visits
- o Early screening for children's health and developmental problems
- o Information on other community resources for families and young children
- o Libraries of books, toys, and other learning materials

Licensed parent educators and early childhood teachers offer ECFE activities in school buildings, shopping centers, apartment buildings, homeless shelters, churches, and other community sites. The programs work closely with education, health, and human service agencies to help parents and children obtain needed services. Each project has an advisory council that helps to match services to community needs. Parents make up a majority of each advisory council.

Why It Is Promising: Parents and children participate together. Research suggests that early childhood programs involving both parents and children are more effective than programs focusing exclusively on the child. Because all families can benefit from support, especially during the early years of parenthood, ECFE is open to <u>all</u> families. As a result, the program avoids the potential segregation and stigma associated with targeted programs. Finally, coordination among local agencies is emphasized.

Costs: It costs approximately $300 per participant to offer the basic program, which includes parental education, early childhood education, and parent-child interaction. Families typically participate two hours a week throughout the school year. Costs vary with the extent, intensity, and location of services.

Evaluation: The potential of ECFE to prevent or reduce later learning problems of children is borne out by evaluation of the Minnesota program and similar programs throughout the country. Parents report that the support from other parents and the skills and understanding acquired in the program have increased their satisfaction in their parental role. Among a sample of children who participated in ECFE, 90 percent of their kindergarten teachers agreed that the children had more positive attitudes about school than their non-ECFE counterparts; 92 percent of teachers reported that the ECFE children were better prepared; and 90 percent noted that ECFE children had better social skills than other students.

Where to See It: Duluth, Minnesota

Contact: Lois Engstrom or Betty Cooke
Minnesota Department of Education
991 Capitol Square Building
550 Cedar Street
St. Paul, MN 55101
(612) 296-8414

Syracuse Prekindergarten Program

Kind of Project: Early childhood education.

Purpose: To provide at-risk children with a comprehensive preschool experience that focuses on the development of language and self-esteem. Comprehensive support services are provided for children as well as parents.

Description: The program, for three-and four-year-old children, has been operating for 26 years, with 20 sites in Syracuse. It is funded through the New York State Prekindergarten Program as well as local school district monies, and serves 900 children per year. The program encourages active parent participation.

The program is offered four half-days per week for children; on the fifth day, parents participate in groups led by a social worker on topics of interest to parents (e.g., discipline, health issues) or in parent-child activities led by an early childhood teacher. Parents also are able to receive training to become classroom aides.

Why It Is Promising: Key factors in the success of this program include employing staff who are highly qualified and committed to the project. The program also encourages teachers to be flexible and responsive to children's needs. Members of the staff are encouraged to reach out to parents in a variety of ways, including holding formal programs for parents and making home visits.

Evaluation: A local evaluation was conducted in addition to teacher observation, anecdotal records, and developmental testing done in prekindergarten, kindergarten, and grade 1. Evaluations indicated significant differences between program and comparison children in achievement, attendance, promotion, and need for special education through grade 7. Children of parents who were more actively involved scored better on the Peabody Picture Vocabulary Test, the Walker Readiness Test, and the Cooperative Preschool Inventory.

Where to See It:

Dr. Weeks
710 Holly Avenue
Syracuse, NY 13203

St. Vincent's
1103 Burnet Avenue
Syracuse, NY 13203

Boys' Club
2100 East Fayette Street
Syracuse, NY 13224

Southwest Community Center
401 South Avenue
Syracuse, NY 13204

McKinley-Brighton
141 West Newell Street
Syracuse, NY 13205

Cost: $3,300 per child annually

Contact: Rhoda Freedman
Syracuse Prekindergarten Program
Syracuse City School District
Blodgett School
312 Oswego Street
Syracuse, NY 13204
(315) 435-4276

Dallas Model Preschool

Kind of Project: Early childhood education.

Purpose: To serve all low-income four-year-olds in the elementary school zone.

Description: The Texas Instruments Foundation joined with Head Start to sponsor the Margaret H. Cone Center, a model high-quality preschool program, which opened in March 1990 with 86 children. Also involved were the Meadows Foundation, the Communities Foundation, the University of Texas at Arlington, and the Julius C. Frazier Elementary School.

The program supplements the usual Head Start program in several ways. A nurse-practitioner on staff actively seeks to provide all the health and dental services that the children may require. There are two social workers on the staff at the preschool who provide social services for the children and their families using case management strategies. Employment counseling also is provided.

Eighty percent of the children's nutritional needs are met through the program, as opposed to the 50 percent met by other Head Start programs.

Four parents are currently enrolled in a general equivalency diploma (GED) program and 11 others recently completed the Paid Parent Program to become
Head Start teacher's aides.

The program is a full-day (nine-hour) year-round program. Staff are trained in the High Scope curriculum, which encourages developmentally appropriate and child-initiated activities in an enriched learning environment.

Why It Is Promising: This program supplements Head Start with resources from business, the community, and the schools and serves family needs with health and dental services, social services using case management strategies, and employment counseling.

Evaluation: The program is currently being evaluated; the evaluation seeks to follow children through 12th grade.

Where To See It: Margaret H. Cone Head Start Center
4716 Hatcher St.
Dallas, TX 75210

Costs: $5,737 per child (Head Start funds $3,300 per child, Texas Instruments funds $2,437 per child). Texas Instruments provides $288,000 annually to support the preschool program.

Contact: Ann Minnis
Grants Administrator
Texas Instruments Foundation
P.O. Box 650311
Mail Station 3906
Dallas, TX 75265
(214) 917-4505

Academia del Pueblo, Kansas City

Kind of Project: Early childhood education.

Purpose: To help Hispanic children perform at grade level, to get parents involved in their children's education, and to increase children's and parents' self-esteem.

Description: The program provides after school and summer classes for Hispanic children in kindergarten through fourth grade. The program is located at the Guadalupe Center, a multiservice organization in Kansas City, Missouri. A special reading program for the children is held at a local university. The program includes instruction in language arts, reading, and mathematics as well as enrichment activities for two and a half hours twice a week. For parents, the program offers groups that meet monthly, classes in reading and family literacy that meet three times per week, and discussion groups. The program is conducted in fall, spring, and summer; families are expected to participate for at least two of these sessions.

The program was developed by the National Council of La Raza, which works with community-based organizations to improve education for Hispanic students.

Why It Is Promising: A key factor in the success of this program is its links with the schools; principals and teachers refer students to the program. Other key factors are the provision of tutoring for elementary students and encouragement of family support.

Cost: $1,245 per family.

Evaluation: La Raza is conducting a formal evaluation that will examine child performance in school.

Where To See It: Guadalupe Center, Inc.
2541 Belleview
Kansas City, MO 64108

Contact: Gilbert Guerrero
Academia del Pueblo
Guadalupe Center, Inc.
2541 Belleview
Kansas City, MO 64108
(816) 472-5108

Project Home Base, Yakima, Washington

Kind of Project: Early childhood education.

Purpose: To provide home teaching visits to disadvantaged families with preschool children who have been identified as having developmental delays, and thereby reduce the likelihood of development delays for high-risk children upon entering kindergarten.

Description: The program is operated as one component of the Yakima, Washington, school district's Early Childhood Center. Participating families live in Chapter 1 attendance areas or meet the eligibility requirements of Head Start; about 16 percent of the participating children qualify for special education.

The program is an adaptation of the Follow Through Parent Education model developed by Ira Gordon. Parent educators, many of whom are former teachers, visit families' homes each week, working with the parent for 45 minutes to an hour. The home teaching visits are designed to enhance the parents' teaching and parenting skills, while developing the child's intellectual skills and encouraging language and perceptual/motor growth.

In 1988-89 the program served 360 families and 496 children. In 1989-90 the program served 344 families and 470 children. Families typically stay in the program for two years.

During the home visits the parent educators choose among some 200 home activities designed to enhance parents' teaching and parental skills and to develop children's cognitive skills, particularly language and perceptual-motor development. For example, one home activity shows parents how to play a picture-matching game with their children, using cards constructed by parents and children from magazine pictures. In addition to its home activities, Home Base has developed a set of "desirable teaching behaviors" that each parent is encouraged to apply when doing the home activities, such as giving the child time to respond after the adult presents information or an idea to the child. Home visits are supplemented by special events and occasional workshops.

Why It Is Promising: Staff qualifications and commitment to the program's philosophy are key elements. Strong, ongoing support for staff is critical; this includes consistent staff in-service, team building, group exercises, and daily staff meetings. The program enjoys district support and commitment. It is also buttressed by an integrated social service agency system for young children and their families, where most professionals in the system know each other.

Costs: The single largest funding source is federal funds through Chapter 1, followed closely by state and local levies.

Evaluation: A formal evaluation completed in the spring of 1991 indicated a statistically significant difference in reading achievement for Home Base children when compared with a sample of unserved disadvantaged children. The second-grade Metropolitan Achievement Test scores were used for the comparison. The program maintains detailed logs on parent contacts and administers the DIAL-R Developmental Indicators for the Assessment of Learning and the Denver Developmental to determine eligibility to the program.

Where to See It: Yakima, Washington

Contact: Carol Ann Forsberg
Yakima School District
104 North 4th Avenue
Yakima, WA 98902
(509) 575-3295

Kenan Trust Family Literacy Project, Jefferson County, Kentucky

Purpose: To break the intergenerational cycle of low education and poverty by helping parents develop their parental, literacy, vocational, and other basic skills and by fostering their preschool children's development.

Description: The Kenan Trust develops and disseminates an intergenerational literacy model that offers a full-day, school-based program that parents and children attend three days a week. The Kenan program is the only one in the Jefferson County (Kentucky) School District that offers free early childhood education. Three elementary schools in Louisville, Kentucky, were the first to offer the program, which now operates at more than 200 sites in 42 states. To be eligible, parents must lack their high school diploma or general equivalency diploma (GED) and have children who are three or four years old. Most parents are working toward a GED. Many are unemployed high school dropouts on public assistance.

Together, parents and children ride the school bus, eat breakfast in the school cafeteria, and work on activities for at least 45 minutes during the day. Parents receive three hours of adult basic education and literacy instruction while their children participate in the cognitive preschool program, based on the High Scope model. Then, while the children nap, the parents meet as a group to discuss parenthood, child development, and other family issues, guided by early childhood teachers.

The program also offers classes to develop skills and volunteer opportunities. In addition, the program refers families for counseling and health and social services, as needed.

The National Center for Family Literacy currently operates the Kenan program in Louisville, in addition to training 1,500 teachers annually and providing technical assistance to help implement the program nationwide.

Why It Is Promising: Combining early childhood and adult education programs provides child care and incentives for parents who want to return to school, plus high-quality education for their children. Parents learn new ways to interact with their children, especially for educational activities. Discussions with other adults also help parents develop a sense of trust and confidence.

Costs: The program is funded primarily through grants from the William R. Kenan, Jr., Charitable Trust of Chapel Hill, North Carolina. In Louisville, the Kenan grant pays for all salaries, supplies, and materials through the school district, which contributes building space and utilities and other in-kind items. The program receives federal funds through the Adult Education Act. A recent $2 million grant from Toyota Motors funded the establishment of multiple sites in five states; this grant money leveraged an additional $1.5 million in city revenues for the program.

Evaluation: Using High Scope measures, 21 percent of the children were found to be proficient in cognitive areas associated with kindergarten. By the end of the year, this figure had risen to 88 percent, even though more than one-third of the children were a year younger than kindergarten entry age. Parents showed progress in attaining GED certification and improvement on the Test of Adult Basic Education in reading, math, and language arts.

Where To See It: Louisville, Kentucky

Contact: Sharon Darling
President, National Center for Family Literacy
401 South 4th Avenue, Suite 610
Louisville, KY 40202
(502) 584-1133

Service to Children Project: Abbeville-Greenwood (South Carolina) Regional Library

Purpose: To design and implement programs promoting reading and library use among children (between the ages of 2 and 12) and their parents. An emphasis is placed on reaching disadvantaged children.

Description: A children's services Coordinator was hired to develop and implement the following activities:

- o Six story-hour programs geared toward children from disadvantaged families.
- o A family literacy program focused on preschool and elementary school-age children and their parents.
- o Contacts with and story-hour presentations at area day care centers, Head Start centers, hospitals, and other institutions that provide care to young children.
- o A regular schedule of children's story hours at the branch libraries and selected bookmobile stops.
- o Publicity on all public library services to children.

Why It Is Promising: Many children are unable to be involved in library programs, mainly because of a lack of encouragement, an inability to travel to the library, and a lack of knowledge of programs offered by the library. This project was designed to remove these barriers. All activities were offered at no cost to parents or their children.

Costs: The total cost of this project was $41,750, with the Library Services and Construction Act providing $25,000 of the total project fund.

Evaluation: This project will be evaluated at the completion of its first year. Because the project is focusing on a previously unserved population group, success will be determined by increases in library use statistics. Areas in which statistics are being kept include new juvenile registrations, circulation of books and materials, number of programs presented, and attendance at these programs. The library director, assistant director, and the children's services librarian have also been meeting regularly to assess progress.

Contact: Bruce Heimburger
Abbeville-Greenwood Regional Library
106 North Main Street
Greenwood, SC 29646

Montessori Schools

Purpose: To help children learn concepts through sensory experiences, become competent in daily activities, and develop autonomy and curiosity.

Description: The Montessori method, founded by Maria Montessori and embodied in a growing number of schools in the United States, is a "total curriculum" approach, entirely integrated and sequenced with detailed materials for ages 3 through 12. The approach is based on adapting flexible curriculum materials to students' individual developmental needs. Teacher training emphasizes sensitivity to students' individual learning styles and encouragement of student-directed learning. Montessori schools are dedicated to the physical and emotional, as well as intellectual, development of each child.

In Montessori schools, students are grouped in multi-age clusters from preschool (ages 3-6) and elementary I (ages 6-9) to elementary II (ages 9-12). During the day, students select their own activities from a wide array of reading, math, art, and science materials--all of which are designed to emphasize concrete activities. (For example, preschool students touch sandpaper letters as part of learning the alphabet, and elementary students use wooden shapes to understand geometric concepts.) These materials also allow children to work independently and evaluate their own efforts. During the school year, teachers encourage students to develop different skills. Montessori practices are similar for older students, although materials and activities become more sophisticated.

Why It Is Promising: Montessori programs have been well established in private schools for the past 20 years; at present, there are approximately 3,000 private Montessori schools. The number of public programs grew steadily in the past decade; in 1990-91, there are more than 100 public Montessori schools, serving 14,000 children. From this combination of private and public involvement, as well as 70 years of European practice, the Montessori education model has acquired a strong operational history, well-developed teacher training methods, curriculum depth, substantial of parental involvement, and a clear organizational structure. Two national associations, whose philosophies differ slightly, train teachers in common Montessori goals and methods.

Costs: Estimates of the start-up costs for creating a Montessori classroom show that initial materials and training costs are high--approximately $15,000 per classroom--plus up to $5,000 for teacher accreditation. However, materials have much lower replacement rates than textbooks, and class sizes are typically larger than average, with a student-teacher ratio of 25:1 (plus an aide); these features make yearly per-pupil expenditures comparable to other programs.

Evaluation: Researchers have conducted more than 200 studies of the Montessori approach, most since 1970. The large majority of these evaluations verify the social and academic effectiveness of the model. For example, one well-designed longitudinal study in Louisville found that low-income eighth-graders from a Montessori kindergarten scored higher in math and reading than students who had participated in conventional kindergartens. The Louisville Experiment tracked 248 randomly-assigned students (including a control group) through the eighth grade and showed a variety of academic and social gains. (However, comparisons of program effects were positive for Montessori boys but slightly negative for girls, and there were no significant differences in IQ levels.) Another study found that Montessori students were retained less often, completed more years of school, and made academic transitions more successfully than students from other programs. Of course, programs vary in their effectiveness, but qualitative and quantitative evaluations of Montessori programs are generally favorable.

Where To See It: Flintstone Elementary School

Contact: Delores Smith
Flintstone Elementary School
800 Comanche Drive
Oxon Hill, MD 20745
(301) 567-3142

Child Development Center, Gallaudet University

Purpose: To develop a model for integrating hearing-impaired children with hearing children in developmental child care emphasizing cognitive, social, and linguistic development.

Description: The project provides deaf role models for hearing-impaired children from two to eight years old and appropriate training for child care center staff. The project will develop individualized education plans (IEPs) that emphasize cognitive, social, and linguistic development. Preservice and in-service training for staff is provided on such topics as writing an IEP, understanding the components of successful integration, adapting class schedules and teaching techniques for deaf children, understanding to the curriculum, understanding the safety and health issues related to deafness, and working with the deaf child in a hearing-deaf family. Family participation is encouraged.

A key component of the program is the cooperative relationship between the educational/child care agency, which provides services for hearing and hearing-impaired children, and the deaf services agency, which provides ongoing educational and supplemental services.

Why It Is Promising: This project provides an innovative way of providing an intensive focus on the cognitive, social, and linguistic needs of children while providing interactions with hearing

Why It Is Promising: This project provides an innovative way of providing an intensive focus on the cognitive, social, and linguistic needs of children while providing interactions with hearing children and adult role models with disabilities.

Costs: The project is funded at approximately $105,000 per year.

Contact: Gail A. Solit
Gallaudet University
Child Development Center
Washington, DC

Roosevelt Primary Education Center, Redwood City, California

Purpose: To provide educational and social services to low-income children and their families.

Description: The Roosevelt School has expanded and reorganized its educational services using both public and foundation money. With funds provided by the California Department of Education the school offers a full-day preschool program and after school child care for children in grades K-3, a program that has been under way for 38 years. Using a Cal Foundation grant, the school has developed an in-home family intervention program for disadvantaged families.

The state-funded preschool and after school child care programs in Redwood City serve a total of 240 students from low-income families at three school sites in the district, including Roosevelt. Approximately 90 percent of the children are Hispanic, 9 percent are white, and 1 percent are African-American. As part of the agreement between the district and the child care program, Roosevelt supplies three rooms for the preschool component and three rooms for the K-3 component free of charge. The preschool is open from 7 a.m. until 6 p.m.; most students stay between eight and nine hours, depending on their parents' work schedules. The after school program runs from the end of the school day until 6 p.m. Both programs have extensive waiting lists and are obliged to serve the students from the lowest-income families on their waiting lists as space becomes available.

The preschool and after school programs use the High Scope curriculum, a child-centered program that emphasizes student freedom and responsibility. At the start of each day, students communicate with their teacher either in writing or verbally, depending on their age, about the activities in which they wish to participate. They may select from among numerous options, including the reading corner, the playhouse (which has household goods and clothes for children's play), an art area, a quiet area, a manipulatives corner (with blocks, cars, and dolls), a game area, and a science area. After engaging in an activity, the children clean up after themselves and talk or write about what they did and what they learned during a group session. In addition, the centers offer a nap period and a music time.

Roosevelt's family intervention program, first implemented during the 1991-92 school year, employs bilingual in-home intervention specialists to work with families having difficulty coping with poverty-related stress. These specialists visit families' homes to help them develop strategies to reduce stress in their lives and refer them to needed social services.

Why It Is Promising: In its quest to become a model primary school the Roosevelt school has developed a comprehensive, child-centered approach that responds directly to the needs of its largely disadvantaged community. It has combined an imaginative curriculum and innovative student assessment program with a variety of services designed to reduce the school dropout rate by helping families prepare their children for successful school careers. Recognizing that families from low socioeconomic backgrounds are often intimidated by schools, Roosevelt has taken the extra step of reaching out to them in their homes through its intervention program.

Cost: Roosevelt's educational program does not require additional per-pupil funding from the district, and its other services have been developed using grants from the state and private foundations. The child care center and preschool program cost an average of $104 per month per pupil, with parents paying a variable portion of that amount according to their income; no family however, pays more than $60.

Evaluation: Researchers from Stanford University conducted a longitudinal study of Roosevelt's preschool and regular school programs. Despite the low socioeconomic status of Roosevelt's student population, the research team found that students who enter the preschool program and remain at Roosevelt through the third grade score well above the national average on standardized tests. The school will also conduct a formal evaluation of its intervention program after it has operated for several years.

Contacts: Brenda Dyckman
Principal, Roosevelt School
2434 McGarvey Ave.
Redwood City, CA 94062
(415) 369-5597

Chuck Snyder
Director, Child Care Centers
2434 McGarvey Ave.
Redwood City, CA 94062
(415) 366-6819

The 21st Century Schools Program

Purpose: To enhance the adequacy and accessibility of child care by using schools as sites for preschool child care, before- and after school care for school-age children, and comprehensive family services.

Description: In 1987, Edward Zigler at Yale University's Bush Center in Child Development and Social Policy created the concept of "the school of the 21st century." Independence County, Missouri, was the first site to implement the program, beginning in 1988. Several districts in Connecticut, Colorado, Wyoming, and Kansas are now implementing the model.

The 21st Century Schools program includes two child care components and three outreach components, which can be tailored to fit the characteristics and needs of individual schools and districts. The first child care component is school-based, year-round, all-day care for preschool

children ages 3 to 5. Through such care the program takes full advantage of school facilities, provides developmentally appropriate child care in a centrally located, safe environment, and gives preschoolers the chance to become familiar with school to ease the transition to kindergarten. The second child care component is school-based, before- and after school and vacation care for children between the ages of 5 and 12. This child care program does not emphasize academics in favor of recreational activities, giving children the opportunity to relax before and after a full day at school.

The first outreach component is a home visitation program. Trained parent educators identify pregnant women and young parents and regularly visit their homes, providing age-specific information about their children and offering the support and guidance that many young parents do not receive from family or community members. Through the second component, 21st Century schools program staff reach out to established family day care providers and include them in training sessions, information networks, and other staff development activities in order to create links among child care providers in a community, reduce the traditional isolation of family day care providers, and enhance the quality of family child care arrangements. The third component is a school-based information and referral service, to provide parents with information about other child care providers, evening care, child care regulations, sources of financial assistance, and the characteristics of quality care.

A major feature of the 21st Century Schools program is the role of the Yale Bush Center in Child Development and Social Policy. Center staff provide onsite consulting and technical assistance throughout implementation. Each participating school also belongs to the Schools of the 21st Century Network, which facilitates communication among member schools through a quarterly newsletter. The Bush Center also hosts a three-day annual training institute for persons interested in creating a School of the 21st Century.

Why It Is Promising: The 21st Century Schools Program offers a comprehensive strategy to address child care needs. It alleviates uneven access to quality child care, enhances the professional status of child care providers, and expands the hours that school buildings are in use. The program is grounded in research that demonstrates the positive effects of developmentally appropriate child care on later academic and personal success. It recognizes the pressures on working parents, particularly young parents; with secure child care, parents tend to miss fewer days at work and suffer less stress.

Costs: Cost for start-up can be high, because often school space must be renovated and staff must be developed. Communities around the country have created diverse funding mechanisms, piecing together government grants and subsidies, corporate contributions, nonprofit assistance, and community resources. Leadville, Colorado, receives funding from the state departments of education and social services, foundation grants for handicapped education (which is included in the center's services), and corporate contributions. In Connecticut the state legislature appropriated funds for the Family Resource Centers, freeing them from time-consuming fund-raising responsibilities; tuition follows a sliding fee scale based on families' ability to pay. Laramie County, Wyoming, uses eligibility for free and reduced-price lunches as a guide to determine fees.

The Yale Bush Center offers training to program staff free of charge, but does not provide funds for wages, salaries, or materials to any of the sites.

Evaluation: Staff at the Yale Bush Center are in the process of conducting a three-year longitudinal evaluation of the 21st Century Schools Program. The evaluation is outcome based, comparing the experience of projects in Independence and other sites with the original goals of the program. The 1991-92 school year is the third and final year of the evaluation.

Contact: Yale Bush Center in Child Development and
Social Policy
Department of Psychology
P.O. Box 11A Yale Station
New Haven, CT 06520-7447
(203) 432-9944

Where to See It: Killingly Public Schools Family Resource Center

Contact: Paula Lefevre
P. O. Box 218
Rogers, CT 06263
(203) 774-9034

Success by 6

Purpose: To promote the healthy development of young children, particularly those at risk of early failure, through mobilizing community awareness and resources.

Description: Success by 6, launched in 1988 by the United Way of the Minneapolis Area is an umbrella organization with sponsors from the business, government, labor, education, health, and human service sectors. It has three objectives: (1) to build community awareness about the needs of young children, (2) to improve access to social services for all families with young children, and (3) to expand collaboration between the public and private sectors. It organizes the community rather than directly providing services.

During its first 2 years of operation the program has had numerous accomplishments. A public awareness campaign has been conducted through the local media, and public forums and cultural diversity workshops have been hosted by the United Way and supported by the local public health department. The development of a children's state legislative agenda resulted in an increase of $35.6 million in public funds being spent on young children and an additional $5.6 million in public funds on child care.

Prenatal care has been improved, and a school for pregnant teens has been started at Honeywell Corporation. Information about early childhood development and the activities required to foster it has been developed for parents with low reading skills. And an outreach and service coordination model designed to bring the principles of Success by 6 to individual communities--called Way to Grow--has been implemented and replicated in five Minnesota communities. Way to Grow is operated jointly by Success by 6 and the Minneapolis Youth Coordinating Board.

The program has also persuaded major corporate, nonprofit, and public-sector organizations to become involved in partnerships committed to the ideals of Success by 6.

Why It Is promising: The multifaceted, integrated approach of Success by 6 addresses the interrelated needs of families with young children. Public education is an important component of the program. In addition, the United Way of America has formed a partnership with the Minneapolis

United Way to replicate the program nationwide, offering technical assistance to communities wishing to adopt the Success by 6 concept. The program is currently operating in 25 cities nationwide.

Costs: Because the program is a broad-based initiative, Success by 6 receives funding from many sources, each of which contributes to different program components. The United Way of the Minneapolis Area has allocated $450,000 annually to the program over the past three years, part of a total of $3 million devoted to early childhood services. Other groups, including Honeywell Corporation and numerous community groups, regularly make in-kind contributions to the project by providing services, space, and staff time.

Evaluation: The University of Minnesota is conducting an extensive process evaluation of Success by 6. Preliminary findings indicate that the program has succeeded in raising awareness and increasing volunteerism and community involvement. Because of the sweeping nature of the initiative and its connection with many other early childhood programs, evaluators have not been able to isolate the specific effects of the program on participating children.

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United Way of America, MN12-5300
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Minneapolis, MN 55440
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Missouri Parents as Teachers (PAT) Program

Purpose: To provide systematic parental education and support services to help parents in their role as their children's first teachers from the third trimester of pregnancy through age three.

Description: The Parents as Teachers PAT program offers an array of services to parents and children. Participating parents receive home visits by parent educators who are trained in child development, periodic screening of their child's educational and sensory development, and information and referral to support programs. Regular meetings are held for parents who have children of similar ages, while the children participate in play groups. Parents and children also have access to book- and toy-lending libraries, newsletters, and social activities.

Why It Is Promising: This widely disseminated program combines assorted resources to provide support for families--from all socioeconomic and cultural backgrounds--and their young children. The Parents as Teachers National Center, funded by the Missouri Department of Education and numerous foundations, provides training, research, curriculum development, and promotion of public policy that

supports early childhood family education. More than 3,500 parent educators have been trained and certified by the center. The national center is adapting Parents as Teachers to serve teen parents, families with children who have special needs, American Indian families, and formerly homeless families. Parents as Teachers operates in 543 Missouri school districts and continues to expand beyond Missouri's borders. As of March 1991, 195 programs were operating in 35 states outside Missouri.

Costs: State funds are used by districts to identify and recruit families.

Evaluation: Independent evaluations of the program note that, compared with a control group, PAT participants demonstrate more advanced cognitive and social development. In first grade, former student participants scored higher than a comparison group on standardized reading and mathematics achievement. Teacher assessments of personal and social development were also higher for participants than for students in control groups. Participating parents, too, were more knowledgeable about child development and more active in their children's schools. The program has been recognized as effective by the U.S. Department of Education's Program Effectiveness Panel.

Results of the 1991 evaluation of the PAT program's effect on 400 randomly selected families enrolled in 37 school districts across the state indicates that both children and parents continue to benefit from PAT. PAT children scored significantly higher than national norms on measures of intellectual and language abilities. As measured after three years' participation in the program, parents' knowledge of child development and parenthood practices significantly increased for all types of families.

Where to See It: Ferguson-Florissant School District

Contact: Mildred Winter
Parents as Teachers National Center
University of Missouri-St. Louis
Marillac Hall
8001 Natural Bridge Road
St. Louis, MO 63121
(314) 553-5738

Marion Wilson
Ferguson-Florissant School District
1005 Waterford Drive
Florissant, MO 63033
(314) 831-8798

Preschool Collaboration Interagency Council of Alachua County, Florida

Purpose: To provide a vehicle for the implementation of comprehensive, multiagency services for preschool children and their families in Alachua County, Florida.

Description: A school district with a long standing commitment to collaborative and comprehensive early childhood services has established an interagency council that serves as the authoritative source

of policy, goals, needs assessment, and networking among all county agencies involved in early care.

The council membership includes providers of early childhood services; education, health, and social services; representatives of institutions of higher education; and parents. At monthly meetings the council develops an agenda for action that is communicated back to the school board. All early childhood programs sponsored by the school board are sent to the council for approval.

The council has integrated Head Start, the state's prekindergarten program, and Title XX through a series of interagency agreements; made preschool available to all eligible four-year-olds; and made services available to all children across program sources. The collaboration has resulted in a curriculum resource that will be used in all preschool programs, regardless of sponsorship, and has arranged for the coordinated distribution of materials. Classes in parenthood and projects to improve the language development of infants and toddlers are two other collaboration initiatives.

Why It Is Promising: This county-based collaboration is improving the quality of services, maximizing efficiency, and bringing together an unprecedented number of agencies and community members. It is based in a formal agreement with the school board, which delegates genuine power to the council. It also offers experiments in one-stop shopping for comprehensive services.

Costs: Major funding for the collaboration's initiatives comes from state and federal sources and passes through the school department, which acts as fiscal agent.

Evaluation: None, apart from specific examples of project accomplishments.

Where to See It: Alachua County, Florida

Contact Bebe Fearnside, Preschool Services
School Board of Alachua County
620 East University Avenue
Gainesville, FL 32601-5498
(904) 336-3300

Sources of Further Information

Compensatory Education Program
Office of Elementary and Secondary Education
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Contact: Mary Jean LeTendre, Director

Compensatory education programs authorized under Chapter 1 provide assistance to states and localities to meet the special educational needs of educationally disadvantaged children.

ERIC Clearinghouse on Elementary and Secondary Education
University of Illinois
805 West Pennsylvania Avenue
Urbana, IL 61801
(217) 333-1386

Contact: Lilian G. Katz, Director

Collects, abstracts, indexes, and disseminates information on topics relating to the physiological, social, and cultural development of children from birth through early adolescence, with emphasis on education theory, research, and practice; provides reference and referral services, on line searches, consultations on search strategy, and technical assistance; conducts training seminars and workshops for elementary and early childhood groups and information service representatives; produces information analysis products; and disseminates complimentary ERIC products, such as the ERIC Digest, newsletters, and brochures.

Family Resource Coalition
Suite 1625
230 North Michigan Avenue
Chicago, IL 60601
(312) 341-9000

Contact: Judy Langford Carter, Executive Director

Represents some 2,500 community-based family resource programs and practitioners throughout the United States and Canada. The organization collects and disseminates information about local and state family support programs; provides training and technical assistance; and publishes materials on topics related to family support.

Head Start Bureau
Administration for Children and Families
U.S. Department of Health and Human Services
P.O. Box 1182
Washington, DC 20013

Contact: A. Kenton Williams, Associate Commissioner for Head Start

Funds local agencies to provide comprehensive developmental services to preschool children of low-income families. Head Start Programs include education, social services, and health services, and they emphasize parental involvement. The Head Start Bureau also administers technical assistance, training, research and evaluation, as well as other research and development projects.

National Association for the Education of Young Children
1834 Connecticut Avenue NW
Washington, DC 20009-5786
(202) 232-8777

Contact: Marilyn M. Smith, Executive Director

National professional association serving nearly 80,000 early childhood professionals; offers individualized educational services and resources to adults who work with and for children through its Information Service; provides policy-related information and legislative analyses through its Public Affairs Division; and administers the National Academy of Early Childhood Programs, a voluntary national accreditation system for high quality early childhood programs.

National Association of Early Childhood Specialists in State Departments of Education
c/o New Jersey Department of Education
225 W. State Street, CN 500
Trenton, NJ 08625-0500
(609) 984-3429

Contact: Tynette W. Hills, President

The NAECS/SDE is a national organization for state education agency staff members with major responsibility in the field of early childhood education. The association promotes high-quality services to young children through improvement of instruction, curriculum, and administration of programs.

National Association of Elementary School Principals
1615 Duke Street
Alexandria, VA 22314
(703) 684-3345

Contact: June Million, Director of Public Information

National professional association serving elementary and middle school principals. Provides magazines, publications, regional workshops, national conventions, and developmental programs for its 26,000 members.

National Association of State Boards of Education
1012 Cameron Street
Alexandria, VA 22314
(703) 684-4000

Contact: Tom Shultz, Director
Center on Education Services for Young Learners

A nonprofit, private association that represents state and territorial boards of education. Its principal objectives are to strengthen state leadership in education policy making, to promote excellence in the education of all students, to advocate equality of access to educational opportunity, and to assure responsible lay governance of public education.

National Black Child Development Institute
1463 Rhode Island Avenue NW
Washington, DC 20005
(202) 387-1281

Contact: Evelyn Moore, Executive Director

Seeks to improve the quality of life for black children and youth; delivers direct services to children and parents; conducts advocacy campaigns aimed at national and local public policies on health, child welfare, education, and child care; and disseminates information.

National Center for Children in Poverty
Columbia University
154 Haven Avenue
New York, NY 10032
(212) 927-8793

Contact: Judith Jones, Director

Encourages debate and disseminates information about public and private initiatives in the areas of maternal and health, family support, and early childhood care and education to strengthen programs and policies for children and their families who live in poverty.

National Center for Clinical Infant Programs
733 15th Street NW
Suite 912
Washington, DC 20005
(202) 347-0308

Contact: Eleanor Szanton, Executive Director

Fosters the optimal health, mental health, and development of children from birth to age three through the exchange of information and encouragement of research, training, and public policy development. Among its activities are a graduate fellowship program, training institutes, technical assistance activities, the bulletin Zero to Three, task forces to facilitate infancy research, reports on research and public policy issues, and a national clearinghouse.

Office of Special Education Programs
Office of Special Education and Rehabilitative Services
U.S. Department of Education
400 Maryland Avenue SW
Washington, DC 20202

Contact: Judith Schrag, Director

Administers the programs and projects that provide special education and related services to children with disabilities. Assistance is provided primarily through state education agencies to help state and local school districts serve these children adequately and effectively. Special Education Programs also funds research, training, and other activities to improve the quality of early intervention, preschool, and special education programs.

Chapter 2

Dropout Prevention

Current Thinking

Context

The rate at which students drop out of school nationwide is well recognized as a major educational, social, and economic problem. Each student who drops out of school faces diminished opportunities for success, including poor employment potential, fewer opportunities for further education, and lower earnings if employed.

Although dropout rates have gradually decreased over the past decade, the rates, particularly for some groups, remain unacceptably high. In 1990, 32 percent of Hispanic youth ages 16 to 24 were high school dropouts, compared with 13.2 percent of blacks, and 9 percent of whites. In central city areas, 15.5 percent were dropouts compared with 9.9 percent in suburban areas (Kaufman, McMillen, and Whitener 1991). Moreover, the proportion of students who are at risk of dropping out--those living in poverty or from non-English-speaking backgrounds--is increasing. Students with disabilities are substantially more likely to drop out of high school before graduation than are other students (Thompson-Hoffman and Hayward 1990).

Findings from Research and Practice

Early Intervention. School strategies for "fixing" the dropout problem have historically focused on special programs targeted at students of junior high and high school age, which provide supplementary assistance to schools. There is evidence, however, that these programs do not begin early enough. At-risk students frequently begin school without the skills needed to succeed; by grade 6, many students are already two years behind grade level (Levin 1987). There is widespread agreement that schools do a poor job of engaging most students in learning. As the numbers and proportions of at-risk students increase in schools, special programs will become a less effective strategy for responding to their needs. Educators are increasingly calling for schoolwide reform to provide new strategies for improving the educational chances of all students from the beginning of their schooling, particularly in areas where the majority are at-risk (Natriello et al. 1988, 1990; Elmore 1990). In areas where the majority of students are succeeding in school, add-on programs targeted toward at-risk students are more likely to be successful. Although early intervention is essential to prevent students from falling behind academically, students can become at risk in later grades for reasons not detectable in the early grades because of personal or family problems or conflict with the school (Wehlage et al. 1989).

Several program components have been identified as common to promising dropout prevention programs--both schoolwide reform and targeted--but few studies have rigorously evaluated the effectiveness of these interventions. There is no indication whether certain components alone are sufficient to produce an effective program or what mix of different program features is needed to keep young people in school and improve their performance (Natriello et al. 1988). Students drop out of school for many reasons, and individual students frequently have multiple problems placing

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them at risk of dropping out (Eckstrom et al. 1987; Orr 1987; Wehlage et al. 1989), requiring multiple strategies for encouraging them to remain in school and improve their performance.

Much more is known about which students are likely to drop out than about what strategies will keep them in school and improve their academic performance. The discussion that follows is organized around factors related to dropping out of school and strategies recommended to address those problems.

Strengthening Academic Content. While keeping students in school is an important goal, implied in the goal is the expectation that students will learn as they continue in school. This is a major challenge for dropout prevention initiatives, because one of the strongest predictors of dropping out of school is poor academic performance in school. Students who make low grades, fail courses, have low test scores, and have been retained in grade have a much higher probability of leaving school before graduation than other students (Eckstrom et al. 1987). Some teachers have expectations that are too low and some academic programs are not sufficiently challenging. Some students believe that the academic program is not relevant to their future (Natriello et al. 1990). Promising dropout prevention programs have adopted one or more of the following strategies:

- The curriculum and instruction are tailored to the student's abilities, giving each student attainable standards for academic performance. Diagnostic techniques are used to determine when students are ready to move on to the next level. Many dropout prevention programs have individualized basic skills remediation, frequently through self-paced computer-assisted instruction (McDill, Natriello, and Pallas 1986).

- Accelerated learning strategies are characterized by high expectations for improving academic performance, with the goal of closing the achievement gap between disadvantaged and other students. Accelerated learning schools have high expectations for students, target dates by which students are expected to meet particular educational requirements, and interesting and challenging curricula that move students along as fast as their capabilities allow (Levin 1987).

- Academic and vocational education are integrated to provide an alternative curriculum to the standard methods of teaching core subjects and to link the school curriculum to future careers. These programs deliberately attempt to connect the content taught in math, science, or English classes with the application of these skills in vocational education and other applied courses such as principles of technology.

- Providing extra instructional help to meet a student's specific learning needs within the context of normal grade promotion has been found to be more effective than retention in terms of learning and cost (Shepard and Smith 1990). Being over age for grade level influences student decisions to leave school. Among students with equal achievement, those who repeated a year had poorer subsequent performance and were more likely to drop out of school than those who were promoted.

- Hispanic high school students are more likely to have been retained in grade than other groups. Bilingual programs enable students with limited English proficiency to learn English while they continue grade-level work (Howe 1987).

Flexible Rules and Programs. Many students who have not been successful in the regular school have been alienated by a large, bureaucratic system that does not respond to their individual needs. As Wehlage et al. (1989) point out, anonymity for students increases with class size, and teachers are

less likely to feel accountable for individual students as numbers increase and personal knowledge of students decreases. Authority to make decisions based on regulations--including modification or elimination of rules, in exchange for accountability for results--should be shifted from outside the school to the school level.

At-risk students function better in smaller classes and smaller schools where teachers can interact with students personally (Wehlage et al. 1989). It is through frequent one-on-one contact that care, support, and personalized teaching are possible, and adults can come to understand students' problems and points of view, and thus have the information necessary to address their needs (Natriello et al. 1990).

Block scheduling, in which a group of students move from class to class together during the day and may be taught by the same team of teachers from year to year, also strengthens students' connections with teachers and other students (Center for the Study of Social Policy 1986).

Alternative schools, organized as schools-within-a-school or housed in separate facilities, provide opportunity for curricular and organizational variation to respond to different learning styles and facilitate changes in school regulations (both more relaxed or more disciplined) for a broad range of students--including those at-risk. To avoid the stigma of separation from the regular school, alternative schools must be high quality with sufficient resources and autonomy (Wehlage et al. 1989).

Increasing Relevance of School to Future. Students are often uninterested in school and drop out because they see no connection between remaining in school and improving their future prospects. At-risk youth often have little information about jobs and careers and few role models in good jobs. When students see a direct relationship between what they do in school, their work experience, and future careers, they are more likely to remain in school and be engaged in their school work (Grant Foundation Commission 1988).

High-quality vocational training develops occupational skills that help youth find well-paid, stable jobs upon graduation and prepare them for postsecondary training. Career awareness counseling and employability skills training can foster the development of appropriate work attitudes and behaviors, including what employers call the "work ethic" (Reisner and Balasubramaniam 1989).

Establishing links between school and business provides opportunities for students to gain work experience, to meet adult supervisors and models in the workplace, and to relate their academic learning to the world of work--facilitating the transition from school to work for at-risk youth. Assistance with job placement is particularly important to youth who have little information and few connections enabling them to find an initial permanent job with opportunity for future advancement (Reisner and Balasubramaniam 1989).

Comprehensive Support Services. At-risk students must often overcome personal and social problems (delinquency, teenage pregnancy, drug abuse, family violence, and poverty) that contribute to behavior problems in school or encourage students to dropout. Researchers are recognizing that students have multiple needs that require comprehensive counseling and social support services (Wehlage et al. 1989; Natriello et al. 1990). Many students who are at risk of dropping out of school need someone at school who will take a special interest in them, spend time helping them with their problems, and increase their interest in school (Sherman 1987).

Individual counseling, either by a trained counselor or teachers, is often viewed as the best way of working with students. Small-group counseling and peer counseling also are used to ameliorate the effects of personal problems on school behavior and performance. Family counseling and education provide parents with effective ways of supporting students' education and working out dysfunctional interaction within the family (Sherman 1987).

A one-on-one relationship with a mentor or tutor can give at-risk children individual attention that is often not available in disadvantaged families and communities. A mentor can serve as a positive role model for success and can encourage at-risk students to stay in school and plan for the future by providing information on possible careers and expectations of employers. Mentor activities can be business or community oriented or school based. A tutor can provide extra help in academic work and reinforce study skills. Peer and cross-age tutoring are cost effective and beneficial to both the tutor and the student receiving help (Sherman 1987; Duckenfield, Hamby, and Smink 1990).

Social support can be based in the school to provide services such as day care for children of students, health care, and transportation. Alternatively, a case manager located in the school can refer students to services available in the community such as legal aid and financial support (Sherman 1987).

Directions

Educators are increasingly calling for schoolwide reform to provide new strategies for improving the educational chances of all students from the beginning of their schooling, particularly in areas where the majority are at risk. Schoolwide reform includes increased autonomy for principals and teachers, early intervention beginning at the elementary level, innovative instructional strategies such as accelerated learning, and coordination of social support services.

In areas where the majority of students are succeeding in school, add-on programs targeted toward at-risk students are more likely to be successful. While early intervention is essential to prevent students from falling behind academically, students can become at risk in later grades for reasons not detectable in the early grades. These programs should target a relatively small number of students and reduce class size; they should provide alternative curricula, facilitate development of personal and social adjustment skills, coordinate social support services, and establish links between education and the workplace.

Suggested Reading List

Center for the Study of Social Policy. 1986. Dropping Out of High School: A Literature Review. **Washington, DC.** A summary of the research on the causes and consequences of dropping out of high school.

Duckenfield, M., J. Hamby, and J. Smink. 1990. "Effective Strategies for Dropout Prevention." Clemson University, National Dropout Prevention Center. September. A synthesis of effective strategies for dropout prevention, including possible programs and additional resources.

Eckstrom, R., M. Goertz, J. Pollack, and D. Rock. 1987. "Who Drops Out of High School and Why? Findings from a National Study." In G. Natriello ed., School Dropouts: Patterns and Policies. **New York: Teachers College, Columbia University.** Analysis of High School and Beyond data on school-related and socioeconomic background factors related to dropping out of high school.

Elmore, R. ed. 1990. Restructuring Schools: The Next Generation of Educational Reform. **San Francisco: Jossey-Bass.** A collection of papers on the varied proposals for restructuring schools to address a range of curricular, professional, and organizational issues and the resources required for successful reform.

William T. Grant Foundation Commission. 1988. The Forgotten Half: Non-College Youth in America. **Washington, DC: Youth and America's Future: William T. Grant Foundation Commission on Work, Family, and Citizenship.** Recommendations on the improvement of secondary education for those students who do not enroll in college or other postsecondary training.

Howe, Harold II. 1987. "1980 High School Sophomores from Poverty Backgrounds: Whites, Blacks, Hispanics Look at School and Adult Responsibilities" Research Bulletin. **Washington, DC: Hispanic Policy Development Project. Fall.** Analysis of High School and Beyond data on student attitudes and expectations about assuming adult responsibilities and policy recommendations.

Kaufman, P., M. McMillen, and S. Whitener. 1991. Dropout Rates in the United States: 1990. **Washington, DC: U.S. Department of Education. September.** A report on trends in dropout rates in the United States, including a discussion of data sources and measures.

Levin, H. 1987. "Accelerated Schools for Disadvantaged Students" Educational Leadership **47(6):19-21.** A rationale for and description of the features of accelerated schools philosophy.

McDill, E., G. Natriello, and A. Pallas. 1986. "A Population at Risk: Potential Consequences of Tougher School Standards for Students Dropouts" American Journal of Education **(February): 135-181.** Review of the possible effects of school reform recommendations on the likelihood of dropping out among disadvantaged students.

Natriello, G., E. McDill, and A. Pallas. 1990. Schooling Disadvantaged Children: Racing Against Catastrophe. **New York: Teachers College Press, Columbia University.** Contains a demographic profile of disadvantaged students, a review of the educational and social programs designed to address their problems, and new directions recommended for restructuring schools to meet the needs of disadvantaged students.

Natriello, G., A. Pallas, E. McDill, J.M. McPartland, and D. Royster. 1988. An Examination of the Assumptions and Evidence for Alternative Dropout Prevention Programs in High School. Baltimore: Center for Social Organization of Schools, Johns Hopkins University.

Orr, M. 1987. Keeping Students in School. **San Francisco: Jossey-Bass.** A review of the policy issues and program responses to the educational needs of disadvantaged students including a categorization of 14 case summaries of programs and strategies aimed at redirecting potential and actual dropouts toward completing their education and preparing for employment.

Reisner, E., and M. Balasubramaniam. 1989. "School-to-Work Transition Services for Disadvantaged Youth Enrolled in Vocational Education." Washington, DC: Policy Studies Associates. An examination of the circumstances underlying the school-to-work transition problems of disadvantaged youth and strategies adopted to address these problems.

Shepard, L., and M. Smith. 1990. "Synthesis of Research on Grade Retention," Educational Leadership **(May): 84-88.** A review of the research on the effects of grade retention and implications for alternative strategies for improving student performance.

Sherman, J. 1987. Dropping Out of School. **Washington, DC: Pelavin Associates.** A multi-volume report on the causes and consequences of dropping out of school, promising strategies in dropout prevention, profiles of exemplary programs, and state programs in dropout prevention.

Thompson-Hoffman, S., and E. Hayward. 1990. "Students with Handicaps Who Drop Out of School." Paper prepared for the Fourth Annual Conference of the National Rural Secondary Schools Council. March. Discussion of the causes and consequences of dropping out of high school among students with disabilities.

Wehlage, G., and R. Rutter. 1986. "Dropping Out: How Much Do Schools Contribute to the Problem?" Teachers College Record **87 (Spring).** A discussion of the effects of defining a group of students as disadvantaged leading to an emphasis on problems of students versus problems with schools.

Wehlage, G., R. Rutter, G. Smith, N. Lesko, and R. Fernandez. 1989. Reducing the Risk: Schools as Communities of Support. **Philadelphia: Falmer Press.** Description of the diverse efforts of 14 secondary schools to prevent students from dropping out.

Examples of Promising Projects

Accelerated Schools

Purpose: To accelerate learning, so that children at risk for failure and dropping out can learn at a faster rate and catch up to their age peers.

Description: The Accelerated Schools program attempts "to transform schools that enroll high concentrations of students in at-risk situations so that they enter the educational mainstream by the end of elementary school." The program concentrates on teaching students to think rather than merely repeat, and emphasizes that the process of change must involve a schoolwide effort.

Why It Is Promising: The Accelerated Schools philosophy is based on three underlying principles--achieving unity of purpose, giving schools power and responsibility for teaching, and building on strengths of the students, parents, and teachers. Henry Levin, the founder of the movement, developed the Accelerated Schools philosophy in response to his experiences studying the economics of education in the late 1970s:

1. Levin observed that no one in schools seemed to be aware of what anyone else was doing. For example, a third-grade teacher could be teaching something that would have bearing on a student's fourth grade experience, but the two teachers would never know it. Different entities were involved in planning, implementation, and evaluation, leading to fragmentation and conflict of purpose. To prevent this, Levin contends that school communities must establish a common vision shared by parents, teachers, staff, and students.

2. Levin maintains that forces outside the school often dominate programs for at-risk students and create an environment of passive compliance. In keeping with much of the current research on school reform, Levin advocates giving schools increased responsibility for important decisions affecting student success.

3. Levin noted that schools tend to focus on the weaknesses of at-risk students. Accelerated Schools, by contrast, begin by building on the strengths of students, parents, teachers, and other school staff.

These three principles underlie the Accelerated Schools process from the selection of curricula and instructional strategies to the transformation of the entire school into a dynamic environment that pursues high academic achievement for <u>all</u> students.

The established process for starting an Accelerated School takes between three and five months to initiate. The entire school community takes stock, creates a vision, identifies priority challenge areas for action, creates governance structures, and uses an inquiry process to understand the underlying causes of their priority challenge areas and begin solving them together. Specific guidelines are being published for accomplishing these steps. A newsletter has recently been started to report information on Accelerated Schools.

Evaluation: Levin and colleagues have designed a model for evaluation that incorporates decision processes, implementation, and student outcomes. Efforts are in progress at Stanford to prepare an information-gathering protocol to be used by Accelerated Schools to collect data on both the process of acceleration and the progress of students.

Several schools that have adopted the Accelerated Schools program have reported some preliminary results that focus on student outcomes. For example, at Hollibrook Elementary School in the Spring Branch Independent School District in Houston, Texas, student and teacher self-esteem and morale increased, incidents of vandalism decreased by 78 percent, 94 percent of all parents attended the spring parent-teacher conferences, and students' scores on the Texas Assessment of Minimum Skills (TEAMS) rose from 60 to 82 percent. At Jefferson Elementary School in Jacksonville, Illinois, the number of students scoring in the lowest percentile in reading decreased by 47 percent in one year.

Where to See It: Currently, there are approximately 50 different Accelerated Schools projects in operation, including several funded by Chevron, USA, and state networks of Accelerated Schools in Missouri and Illinois. The Daniel Webster School in San Francisco (described below) and Hoover Elementary School in Redwood City, California, particularly welcome visitors.

Daniel Webster Elementary School in San Francisco

Rationale: Daniel Webster Elementary School in San Francisco takes an untraditional approach to compensatory education. Instead of slowing down instruction for low-performing, at-risk students, it accelerates instruction (thus the name "Accelerated Schools"). Instead of focusing on drill and repetition, as do most remedial programs, Daniel Webster seeks to develop students' abilities to think and reason. The curriculum emphasizes active and interactive learning, discourse, solving problems, and research. Daniel Webster applies thematic learning, incorporating all subjects into single activities. The school depends heavily upon--and promotes aggressively--the involvement of parents.

Project Description: Many of the 340 students in grades K-5 at Daniel Webster Elementary School are at-risk students. In addition, many of the pupils among the ethnically diverse student body are bused to their school or are recipients of the free-lunch program.

During the first year of the program, the primary concern of Levin and the school community was to promote the involvement of parents. By the end of the year, there were parent volunteers in the classrooms, in the front office, and on the playground. Furthermore, there were more opportunities for social interaction between parents and teachers.

From a staffing standpoint, Daniel Webster's major challenge was to find time for teachers to work together to plan and implement change. Largely because the school's principal took an active role, many teachers actually sought, rather than avoided, chances to take part. Now, teachers participate in every aspect of running the school, including budget planning.

In 1990, Daniel Webster had the largest percentage gain on the California Test of Basic Skills in language and the second-largest gain in mathematics of all 72 elementary schools in San Francisco. Since autumn 1986, when Daniel Webster and Levin's Stanford team first joined forces, the school has also witnessed significant increases in student interest and parent participation.

Contact: Henry M. Levin; Wendy S. Hopfenberg
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Center for Educational Research at Stanford
School of Education
Stanford University
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(415) 725-1676

School Development Program (SDP)

Purpose: To allow parents and school staff to apply principles of child development to support healthy development of children and, in turn, to promote learning. The SDP aims to bring together all members of the larger school community to adopt a "no-fault" problem-solving approach and to make decisions by consensus, with the purpose of creating a social infrastructure that makes improved teaching and learning possible.

Description: The SDP program was developed by James P. Comer of Yale University for inner-city elementary schools, but is now operating in a few middle and high schools and in some schools in middle-income areas. The SDP model includes a governance and management team with representatives of parents, teachers, administrators, and staff; a mental health or support services team; and a parents' program. The governance and management team, which is representative of all adults involved in the school, meets on a weekly basis. The team serves four functions:

1. To establish policy guidelines for the curricular, social climate, and staff development aspects of the school program;

2. To carry out school planning and resource assessment;

3. To coordinate the activities of all individuals, groups, and programs at the school; and

4. To work with the parents' group to plan an annual social activity calendar.

A classroom teacher, the special education teacher, the social worker, and the school psychologist typically make up the mental health or support team. The team works to integrate mental health principles with the functioning of all school activities as well as to give individual teachers suggestions for managing problem behaviors.

The parents' participation program works at three levels:

1. It structures broad-based activities for a large number of parents.

2. Approximately one parent per teacher works in the classroom as a tutor, an assistant, or an aide.

3. A few highly involved parents participate in school governance.

Why It Is Promising: Comer identifies the underlying problems responsible for poor performance of inner-city elementary school students as "family stress and student underdevelopment in areas needed for school success, as well as organizational, management and child development knowledge and skill needs on the part of the school staff." Comer focuses on students' lack of the social, as well as intellectual, skills needed for school success. Because school staff lack appropriate training, they blame students' poor achievement on a lack of inborn ability and poor motivation, and the staff respond with low expectations and punishment. The SDP incorporates a desire to work differently with actual building-level mechanisms to enable families and all school staff to address problems together.

Costs: There are continuing costs associated with research and development for the SDP at the Yale University Child Study Center. However, because the program uses existing personnel, the only additional costs to districts are training and related travel. As discussed later, the Rockefeller

Foundation is considering ways in which training costs can be lowered without sacrificing any of the key elements of the program, through videotapes and local university training sites. However, the new strategies are untested.

The Rockefeller Foundation has committed $7.5 million to supporting the program over a five-year period. The main purposes of the effort are to explore ways to begin program implementation that are independent of Comer and to make the School Development Program more widely available to school districts across the country. The Rockefeller grants have been used to develop videotapes designed to instruct staff at the local level in applying SDP. The videotapes are to provide individual schools with a permanent record of model SDP practices.

Evaluation: Achievement in SDP schools varies from district to district and from school to school within the same district. Variations in achievement may stem from variations in level and quality of implementation of the SDP; organizational stability at the district level, student mobility, curricular and instructional support, quality of teaching staff, and pedagogical sensitivity to cultural diversity and students' needs.

In districts where the SDP has been in place for several years, school achievement data show varying degrees of academic growth. Martin Luther King High School was one of the two New Haven schools where SDP was introduced in 1968. At that time students there were scoring below average and were at the bottom of the district in academic achievement; now they are scoring at or above grade level. For example, in 1989, fourth-grade students at King scored at the 70th and 77th percentile in language and mathematics, respectively, on the Metropolitan Achievement Test.

Controlled studies that randomly selected students from carefully matched SDP and non-SDP schools have indicated significant differences in favor of SDP schools on measures of achievement, self-esteem, and behavior. For example, seventh-grade students in SDP schools earned significantly higher overall grade-point averages and mathematics grades than students in non-SDP schools. Haynes, Comer, and Hamilton-Lee (1988, 1989) reported significantly greater one-year gains for SDP elementary students on the California Achievement Test and on grade-equivalent scores in reading, mathematics, and language.

An evaluation of the SDP in Prince George's County, Maryland, middle schools is currently in progress with support from the MacArthur Foundation. The Rockefeller Foundation is also supporting a national evaluation of the SDP partnerships with universities and the recently established Comer Project for Change in Education.

Where to See It: Some 150 schools have adopted SDP. The New Haven schools, which were the first to adopt Comer's program, may still be the best place to see the program. The program is also operating in some schools in Prince George's County, Maryland, and is being started in the District of Columbia, in a partnership with Howard University. Other areas that have instituted SDP with success include Benton Harbor, Michigan; Sarasota, Florida; Norfolk; Virginia, and Leavenworth, Kansas.

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Coalition of Essential Schools

Purpose: To rethink priorities of individual schools and to simplify their structure in order to focus on helping students learn to use their minds well. The coalition basically aims to develop an alternative to large, impersonal, comprehensive high schools--that is, schools in which staff and students function as a community of learners.

Description: The coalition, which is a nationwide effort founded by Theodore Sizer of Brown University, offers no specific model for changing school practices; rather, each school's teachers, students, administrators, and parents evolve a plan appropriate to the school's own setting based on a set of nine "common principles":

1. The schools should focus on helping students learn to use their minds well, rather than attempt to infuse the student with "comprehensive knowledge."
2. Each student should master a limited number of essential skills and areas of knowledge.
3. The school's goals should apply to all students; only the means to these goals should vary.
4. Teaching and learning should be personalized to the maximum extent possible; no teacher should have direct responsibility for more than 80 students.
5. Teachers should be coaches rather than deliverers of instruction; only then can students learn to teach themselves.
6. Diplomas should be awarded on "exhibition" by students of their grasp of the required skills; the emphasis is on students demonstrating they can perform certain skills.
7. The tone of the school should be trust and decency.
8. The principal and teachers should be generalists rather than specialists in a particular field.
9. Per-pupil cost should not exceed the cost of traditional schools plus 10 percent.

Why It Is Promising: Between 1979 and 1984, Sizer participated in an inquiry into the state of American high schools, commissioned by the National Association of Secondary School Principals and the National Association of Independent Schools. From his work on that project Sizer noticed a number of recurring similarities that transcended traditional boundaries; in other words, urban and suburban, public and private, and big and small schools suffered the same deficiencies. The most dramatic shortcoming was students' passivity in their own learning. Sizer developed the nine common principles from first-hand observation. These principles, which include reasonable cost

guidelines, are aimed at improving education by motivating students to be active learners who eventually learn to teach themselves. Furthermore, because the model is flexible rather than prescriptive, schools may adapt it to their own needs. This flexibility should allow the type of involvement that many researchers are identifying as critical in school reform.

Costs: As mentioned, one of Sizer's nine principles includes a general budget plan, under which per-pupil cost is not to exceed that at traditional schools by more than 10 percent. The suggested Essential School budget also includes student loads of fewer than 80 students per teacher. In addition, the budgeting should accommodate extensive time for collective planning by teachers.

Administrators at one of the coalition's charter members, Walbrook Senior High School in Baltimore, report that the initial costs of the program were approximately 30 to 40 percent per pupil higher, because of the costs of staff development and retraining. However, costs have begun to level off. The school has used videotapes of classes to critique teachers' technique. Also, Walbrook has obtained a private grant to help fund the program and has adapted the teacher-student ratio to 1:100.

Evaluation: The coalition has undertaken a variety of studies, although none has yet been completed. The evaluation methods include techniques such as interviews, on site observations, and surveys. The coalition is currently finishing a project titled "Taking Stock," designed to do a more quantitative analysis of test scores, dropout rates, and other empirical outcomes.

Although the coalition has not completed a formal evaluation, Sizer has been able to pinpoint a number of factors that are necessary for success. According to Sizer, the program works most successfully when four conditions are met:

1. The nine principles must act in combination with one another.

2. Because the program needs complete faculty support, it probably works better when applied to a new school.

3. Each school must fashion the principles to suit its needs.

4. An Essential School must have a clear set of goals.

The coalition periodically publishes a newsletter, titled Horace. In addition, a number of articles on the Essential Schools have been published; many of them are available through the coalition's office at Brown University in Providence, Rhode Island.

Where to See It: Since the coalition was launched in 1984, more than 100 middle and high schools have adapted the principles. Walbrook Senior High School in Baltimore and Central Park East Secondary School in New York City are among the best-known schools to have implemented the program.

Walbrook Senior High School in Baltimore, Maryland

Rationale: In an effort to transform the students from passive receivers of information to active participants in the learning process, Walbrook incorporated the coalition model in 1986. Because Sizer's principles are not static, Walbrook could adapt them to meet the school's particular needs. Instruction focuses on student experimentation rather than lecturing or drills. The student, therefore,

is constantly experimenting, writing essays, or answering questions orally. Promotion and graduation are based on mastery of the required critical skills and knowledge.

Project Description: Walbrook High School is one of the charter sites for the Coalition of Essential Schools. Its student population is 99 percent black. It began implementation of the Essential Schools program in September 1986 with 116 of its 450 ninth-graders. The students were chosen at random by the school scheduler; the only criterion was that they be first-time ninth-graders at Walbrook. The school uses a school-within-a-school model. Initially, the program accepted only ninth-graders. Now, Walbrook has expanded it through 12th grade and accepts upperclass transfers into the program.

In implementing the Essential Schools philosophy at Walbrook, staff concentrate on developing students' "essential" skills--how to speak coherently, read and comprehend, conduct research in libraries, and compute basic math--all the while providing students with the tools they need to continue learning throughout their lives.

Staff development is an important part of the program. The teachers that staff the program are a combination of volunteers and the principal's selections. In an effort not to disturb existing programs, no department heads were chosen to teach in the project. In the initial stages, teachers attended a six-week summer institute and made several visits to Brown University to learn strategies for developing instructional programs based on students' identified needs. Teachers now participate in a staff development institute for two weeks each summer. School administrators have found that the teachers involved in the program have become better teachers. Because so much of the planning is done by the teachers as a group, it is much easier for all of them to take risks.

As at all Essential Schools, Walbrook staff must agree to develop school faculty governing boards, participate in staff development, undergo a staff evaluation every three years, and demonstrate sufficient funds to support their activities. When the beginning ninth grade class graduated in 1990, 73 percent of the class went on to college and the remaining students all had plans to continue their education or to work. The school is beginning to collect achievement data in addition to graduation rates. Mastery of essential skills has been documented through exhibitions of students' work as well as test scores.

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Model School Adjustment Program (MSAP), Broward County, Florida

Purpose: To identify at-risk students early and to facilitate their transition from elementary to middle school and then to high school; and to provide for students and parents an environment in which students' behavior improves and academic involvement increases.

Description: MSAP serves sixth graders who are identified through referrals from their elementary school teachers and counselors. Students typically have poor grades and behavior problems, and are over age for their grade; they must have at least average intelligence and they and their parents must volunteer to participate. The students actively participate in the program for one semester, but follow-up counseling and academic assistance are available to participants through high school.

Peer tutoring is provided by seventh and eighth graders who work on a one-to-one basis with at-risk students in basic skills, class assignments, and study skills. Peer counseling is provided in group counseling sessions held one period per week. Peer counselors are selected from peer tutors and receive training from the project counselor. Individual and family counseling also are available from the project counselor as needed.

Parents are required to attend parental education classes one hour per week for 10 weeks to help them understand and communicate with their children; in particular, they learn how to respond appropriately to their children's problems and successes.

Follow-up support for students is provided through high school, including transition to high school, individual tutoring, and counseling. Broward County Community College has provided free tuition to all students in the program who graduate from high school and wish to continue their education.

MSAP was developed in 1985 at Driftwood Middle School in Broward County. Original funding was provided by a grant from the state of Florida, and federal grants have provided funding to replicate the program in additional schools and counties.

Why It Is Promising: MSAP is an intensive early intervention program that tries to address the factors that lead students to drop out in the early stages. MSAP provides comprehensive parental education and family counseling. The use of students' peers as tutors and counselors provides at-risk students with role models their own age. Program participants who improve their academic performance and behavior become eligible to serve younger at-risk students as peer tutors and counselors in the elementary setting.

Costs: The majority of MSAP program costs are for staff. Staff requirements for the first year of a project are a full-time teacher to coordinate peer tutoring, a full-time family/school counselor, and a full-time clerk. In the fourth year of a project, a full-time program specialist is needed to provide services to high school students. A project admits 30 sixth graders per semester; a fully implemented program serves 240 students by the fourth year. Annual program costs for the fully implemented program in Broward County are approximately $150,000.

Evaluation: An evaluation of this program has followed students through grade 8 and compared their performance with that of a similar group of students not in the program. Students who participated in MSAP were less likely to be absent or suspended and had higher grades than the comparison group in the grade 6. Although absenteeism and suspensions increased and grade point averages declined in the grades 7 and 8, MSAP students continued to compare favorably with the comparison group.

Where to See It: The original project at Driftwood Middle School, Broward County, Florida.

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Partnership Academies, California

Kind of Project: School-business partnership for vocational education students.

Purpose: To provide academic and vocational training to disadvantaged students who are at risk of dropping out of school and who lack skills for entry-level jobs; to build a partnership between business and public schools by satisfying the needs of companies for employees in rapidly growing fields of employment; and to establish a model for dealing with youth unemployment.

Description: The Partnership Academies model was initially developed by the School District of Philadelphia for disadvantaged students. The Partnership Academies model in California is a three-year school-within-a-school program for students in grades 10-12. Students must be at risk of dropping out of school, but must also meet certain entry criteria--including a reading achievement level of at least grade 6 and sufficient motivation and self-management skills to succeed in the program.

The most important aspect of the Partnership Academies model is the integration of the vocational-technical program with core academic subjects in a way that lets students see the importance of their academic subjects in the world of work. Depending on the academy's vocational focus (e.g., health, business, computer science), students are "block scheduled" into integrated academic and technical courses involving three or four courses, including English, mathematics, social studies or science, and technical courses. Students move together from class to class during the day and are taught by the same team of teachers from year to year.

Although businesses donate equipment and allow the academies to use their facilities for field-trip sites, the most important function of businesses is to provide mentors and jobs for academy students. A mentor is assigned to each academy student in the 11th grade to serve as a role model. Students who successfully complete two years in the program and receive recommendations from their teachers work full-time in the summer after their junior year and half-time in the second semester of their senior year.

A reduction in overall teaching load and the reduced student-teacher ratio in academy classes give teachers time to prepare specialized instructional and ancillary activities for students; to monitor and consult on student performance and attendance; to provide personal counseling, including referral to community agencies; and to contact parents as needed.

The Partnership Academies program in California was started in 1981 by the Sequoia Union High School District, the Stanford Mid-Peninsula Urban Coalition, and a group of high-technology companies located in the northern portion of California's Silicon Valley. The California State Department of Education has designated the Partnership Academies as a model school-to-work program, and legislation was passed in 1984 to replicate the academies and in 1987 to expand those

replications. There are 50 replications of the Partnership Academies in California, with state support of over $2 million in 1990-91.

Why It Is Promising: The academies have been cited as "the best single model in the country for business involvement in the schools" by Public Private Ventures, a nonprofit organization. The Partnership Academies are demonstrating a holistic approach based on the premise that the integration of vocational education with basic academic skills can be used to break the cycle of disaffection with school that leads to joblessness for many disadvantaged youth. The partnership between the academies and businesses provides opportunities for students to gain work experience, to meet adult supervisors and models in the workplace, and to relate their academic learning to the world of work--facilitating the transition from school to work for at-risk youth.

Costs: Depending on the technical focus of the academy, the start up costs are substantial because of the need to purchase state-of-the-art equipment. For example, equipment for a fully networked computer lab costs approximately $60,000. Businesses involved in the partnerships often contribute a substantial portion of this cost; in the 1987-88 school year, the private sector contributed about $800,000 to support 10 academies. Annual costs average $750 to $1,000 per student, in addition to the regular district per-pupil expenditure.

Evaluation. Program evaluations have been conducted annually since 1981. Academy students have a higher daily attendance rate (90 percent) than the overall rate at their host schools (77 percent). They receive better grades and drop out of school half as often as the comparison group and perform at a level equal to that of the school as a whole on math, reading, and writing tests. When evaluated by their company supervisors on job performance, they received an average of 3.8 on a five-point scale (1=poor, 5=excellent).

Where to See It: Projects recently developed in Pasadena, California, include computer, aerospace, health care, and printing academies. The business technology academies in Sequoia School District have an interdisciplinary curriculum that uses interactive computer technology to incorporate thinking and problem-solving skills into the English, social studies, mathematics, and business technology coursework.

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Project COFFEE, Oxford, Massachusetts

Purpose: To improve academic performance, reduce absenteeism, and train at-risk youth for entry-level employment.

Description: Project COFFEE (Cooperative Federation for Educational Experiences) is an alternative school model, located separately from the regular school environment. The rationale for this location is the extreme alienation of most targeted youth from the regular school environment, as manifested by truancy, behavioral problems leading to frequent suspensions and other disciplinary actions, court

involvement, substance abuse problems, and other difficulties that have seriously affected their educational progress. COFFEE enrolls students in grades 8-12; students typically have average ability, but read and do math at the fourth- to fifth-grade level.

COFFEE has an abbreviated school day (7:30 a.m. to 12 noon) that involves reduced "free" time--fewer and shorter breaks between classes (one 10-minute smoking break) and no study halls--to minimize the time available for students to get into difficulty. Class size is significantly reduced (ten students) to foster individualization of instruction and development of rapport between youth and adults.

The academic component is integrated with the occupational program and includes individualized instruction in basic academic skills and credits needed for graduation (math, English, science, and social studies). There is also a core occupational component emphasizing entry-level skills and employability and socialization skills. In most instances, this component is implemented as a student-operated business that is responsive to local markets, has business partners, and facilitates students' development of peer associations and team building.

The program offers regularly scheduled career and personal counseling, including crisis intervention and referral to community services as required. Behavioral expectations for students are highly structured, including in-school suspensions implemented within a nurturing and flexible school environment; all teachers and staff serve as role models. A contract system and "reality therapy model" stressing individual responsibility are based on the belief that students have to take responsibility for their actions and get themselves out of trouble. Most of these youth have parents who have given up on their children, and are no longer involved in their education.

The French River Education Center, an independent, nonprofit organization in North Oxford, Massachusetts, that develops, supports, and manages many local educational programs, provides technical assistance to other agencies in replicating Project COFFEE.

Why It Is Promising: Project COFFEE, originally developed for seriously emotionally disturbed youth enrolled in special education, has been successful with other youth who are highly at risk. The program's success is attributed to the alternative environment and the integration of academic and vocational training with hands-on experiences. The team-teaching approach and low student-teacher ratio allows close relationships to develop. What makes the program stand out is its partnership with major corporations and small businesses, which strengthens the vocational training and expands the learning and employment opportunities for students.

Costs: The original Project COFFEE is self-supporting, with an annual operating budget of approximately $600,000 and an enrollment capacity of 120 students. COFFEE has received substantial support from its business partners; Digital Equipment Corporation has provided advanced computer equipment and staff training. Revenue earned by students in the small businesses they run is used to offset equipment and supplies costs. The 18 participating local education agencies buy slots for the students they enroll at a cost of $5,000 to reserve space or $6,800 for enrollment over the course of the year.

Evaluation: Evaluation results indicate that Project COFFEE has a significant, positive effect. Attendance increased significantly during participation over that prior to entrance into the project. Scale scores on the California Achievement Tests increased. More than 80 percent of students participating in the program at Oxford High School in Oxford, Massachusetts, have graduated from

high school. Graduates also had higher employability rates than a comparable group. The program was validated by the Joint Dissemination Review Panel in 1982 and 1986.

Where to See It: The original Project COFFEE is located in a complex of detached buildings behind Oxford High School in Oxford, Massachusetts.

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LaGuardia Middle College High School, New York City

Purpose: To reduce the high school dropout rate, to prepare students more effectively for college or work, and to attract more at-risk students to higher education.

Description: LaGuardia Middle College High School is an alternative high school located on the LaGuardia Community College campus for students in grades 9-12. LaGuardia shares all its facilities with the high school students, who have a college I.D. and access to the college library, cafeteria, science and computer labs, art studio, and gyms. Location of the program on a college campus eliminates the stigma that is often associated with an alternative school. Daily association with college students enables high school students to identify with peers and mentors.

Location on the college campus encourages the college and high school faculties to team teach-the interdisciplinary curriculum. For example, a college professor and high school teacher teach a Science/English class together. This arrangement also gives teachers greater opportunity to develop curricula and to emphasize learning through projects which require student to use knowledge in more than one subject. Middle College students may choose their classes, including college courses, as long as they meet New York state and city diploma requirements.

Each year, students attend school for three trimesters, one of which is in an internship program usually with a social service agency. Students receive academic credit for the internship experience, but are not paid.

Middle College has an intensive guidance program with three full-time guidance counselors and three paraprofessionals for 500 students. The students most at-risk participate in daily group guidance sessions based on the principle that the students care most about what their peers think of them and will respond more readily when a fellow students tells them to stop taking drugs or drinking. Small class size also enables teachers to give students personal attention.

An international Middle College has also been developed using the same structural model that recruits students with limited English proficiency (LEP) who have been in the United States four years or less. The purpose of the program is to reduce the dropout rate among LEP students and encourage immigrants to continue on to higher education. The program features instruction in the content areas in English.

Why It Is Promising: Middle College High School has been cited by Gene Maeroff, education writer for the New York Times, as one of the best examples of a merger of efforts by a high school and a college. The location of the program on a college campus not only eliminates of the stigma often associated with attending an alternative school for at-risk students, it allows use of college facilities and permits team-teaching efforts between college and high school faculties. It also provides an opportunity for students to become familiar with a college environment, encouraging them to enroll in postsecondary education.

Costs: The program is funded through the regular formula for alternative schools received from the New York City Board of Education. LaGuardia Community College annually provides approximately $40,000 worth of in-kind services, such as teacher training and building maintenance. The cooperative education segment of the program allows small class size and differentiated staffing. Because students spend three sessions in academic classes and one session in an internship, fewer students are in classes during any session. The program has also reallocated staff positions, so there are fewer administrators than in most high schools.

Evaluation: The dropout rate from Middle College has consistently been below the dropout rate for all New York City high schools and well below the average for the 16 alternative high schools in the New York City system. Attendance rates have been between 75 and 80 percent, substantially above the attendance rates of students targeted in New York's Dropout Prevention Initiative, who may have comparable academic histories.

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Manhattan Comprehensive Night High School

Purpose: To permit students with adult responsibilities to complete an academic high school diploma by offering classes and activities in the evening and on weekends.

Description: New York City has taken a novel approach to keeping youth in school by adapting one high school's schedule to that of its working students. Classes at Manhattan Comprehensive Night High School are held from 5:00 to 11:00 p.m. on Monday through Thursday evenings, and all day on Sunday, when field trips, cultural and family activities, parenting groups, and physical education also are offered. The school is closed Friday nights and Saturdays, to allow students a break from their hectic week of work and study.

Most "Manhattan Comp" students, who range in age from 18 to 21, have full time jobs and live on their own; about half have children of their own. All have dropped out of other schools. Students from all over New York City are eligible to attend, and there is active recruiting; the staff sends postcards to all students in a targeted age range listed on a city-provided roster of dropouts. The only criterion for admission is that the prospective student be able to complete studies before age 22.

"Manhattan Comp" is a relatively small school, with approximately 450 students. It operates in a building that serves during the day as an annex to another high school, and it has easy access to public transportation. The main barrier encountered in implementing this novel approach has been a bureaucracy geared to the day school concept (for example, State Regents' exams are still offered only in the daytime), but many obstacles have been overcome. For example, nighttime transit passes for city school children, formerly unheard of, have now been negotiated with the Transit Authority.

Partnerships with a local college, hospital, businesses and community organizations provide volunteers, internships, job placements, and health care referrals for "Manhattan Comp" students. The school's evening hours make it much easier for working adults in the community to become involved in school programs.

Since opening "Manhattan Comp" in February 1989, the city of New York has opened three other schools on the same model, one in each of the city's other boroughs.

Why It Is Promising: Manhattan Comprehensive Night High School was the first in the country to offer young people the option of studying full-time at night toward a regular academic diploma. It represents an innovative approach to dropout prevention and to retrieval of students who have already dropped out of schools with conventional schedules. Flexibility is the school's guiding principle. Courses are 10 weeks long, and students can begin their school "day" an hour later than 5:00 p.m. if their jobs so require; they simply take them a little longer to graduate. A liberal "stop-out" policy is also in effect, allowing students to leave temporarily when work or family situations require, and return later.

Many students who would otherwise be unable to finish high school enjoy the freedom offered by "Manhattan Comp". In addition, they do not suffer the stigma that is sometimes attached to being older than their classmates. The principal describes "Manhattan Comp" as a "school of choice"; students are there because they want to be. The same is true for faculty members, who volunteer for assignment to "Manhattan Comp," but have a year during which they can return to their former, conventional schools if they so choose.

Costs: As a public school dependent on public resources, "Manhattan Comp" operates within a budget similar to the budgets of conventional city schools. Collaborations with numerous private and public groups in the city have enabled the school to offer some additional programs at little or no cost to the city.

Evaluation: Although no formal evaluation has been carried out to date, officials agree that the dropout rate for students at "Manhattan Comp" is lower than the rates of most other New York City schools, and much lower for students with similar characteristics. School officials estimate that more than 60 percent of graduates go on to college.

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Valued Youth Partnership

Purpose: To help children who have limited-English proficiency and are at risk for dropping out of school to achieve academic success and improve their language-arts skills.

Description: The Valued Youth Partnership program was modeled after a cross-age tutoring program developed by the Intercultural Development Research Association (IDRA), funded by Coca-Cola USA, and implemented in collaboration with five school districts in San Antonio, Texas between 1984 and 1988. The program targets middle-school students who meet with their teacher-coordinator once a week to develop self-confidence and to improve their reading, writing, and other academic skills so that they can teach these skills to elementary-school students. This class, coupled with the actual tutoring sessions which take place four times a week during the same class period, is offered as an elective. Prospective tutors learn key elements of teaching, including development of lessons, appropriate teaching activities, and evaluation of tutee progress. Student tutors receive a minimum wage for their efforts in working on a 1:3 ratio with tutees. The program also encourages school attendance, which is closely monitored. When middle-school tutors move to high school, they continue to be involved in the program as mentors of middle-school tutors.

Students explore economic and cultural opportunities in the broader community through fieldtrips throughout the year. Parents are encouraged to attend fields trips. Mentors and role models, who are considered successful in their fields and who have ethnic backgrounds similar to those of students, participate as guest speakers. Students' efforts and contributions as tutors are recognized throughout the year; students receive T-shirts, caps, and certificates of merit; are invited on field trips with their tutees; receive media attention; and are honored at a luncheon or supper.

Why It Is Promising: The Valued Youth Partnership program's success is attributed to the idea of valuing at-risk children by placing them in positions of responsibility, as tutors of younger students, and paying them a minimum wage for participation in the program.

Costs: In June 1990 the Coca-Cola Foundation announced a five-year, $1.325 million grant to the Intercultural Development Research Association (IDRA) to expand the Valued Youth Partnership program in five school systems in predominantly Hispanic areas of Texas, California, Florida, and New York. An administrator from IDRA monitors program implementation and ensures that in-service training is provided for teachers and coordinators. A program coordinator, overseen by a school principal, is responsible for managing the day-to-day operations of the program at each site. School districts are responsible for the teacher-coordinator's salary and grant funds are used for the remainder of program services, including stipends for tutors, training, field trips, and the awards banquet. Per-student costs, based on 25 tutors and 75 tutees, range between $140 and $200 per year.

Evaluation: An evaluation of Valued Youth Partnership program sites funded in 1988 compared at-risk, limited English-proficient middle school student tutors with a matched comparison group. After two years, only 1 percent of the tutors had dropped out of school, compared with 12 percent of the comparison group. The reading grades of tutors also improved more than expected over the two-year period, while the reading grades of the comparison group were not significantly better than expected based on their baseline reading grades.

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(512) 684-8180

Sources of Further Information

Center for Research on Effective Schooling for Disadvantaged Students
The Johns Hopkins University
3505 North Charles Street
Baltimore, MD 21218
(301) 338-7570

Funded by the Office of Educational Research and Improvement of the U.S. Department of Education, the center attempts to improve significantly the education of disadvantaged students, focusing on the school as the major source of improvement; to address the needs and interests of the educationally disadvantaged at all levels of development; to address the unique needs of language-minority students; and to incorporate the family and community into the school improvement effort.

National Research Center on Education in the Inner Cities
Temple University
13th Street and Cecil B. Moore Avenue
933 Ritter Hall Annex
Philadelphia, PA 19122
(215) 787-3001

Funded by the Office of Educational Research and Improvement of the U.S. Department of Education, the center aims to strengthen education and related resources in inner cities by conducting interdisciplinary research and development on child socialization practices in inner-city families, on childrearing skills support programs, and on major problems such as substance abuse faced by adolescents in the inner-city schools; by investigating school interventions that foster success among inner-city students with diverse learning characteristics and needs; and by encouraging linkages between schools and community organizations designed to improve the education of inner-city children, youth, and young adults.

The Annie E. Casey Foundation
New Futures Initiative
One Lafayette Place
Greenwich, CN 06830
(203) 661-2773

New Futures is a multi-city, foundation-funded initiative designed to reduce school dropouts and school failure, teen pregnancy, and youth unemployment. The New Futures seeks to develop a sense of community urgency and public accountability for the problems and dilemmas facing youth and to foster changes in the way community institutions collaborate, fund, plan, and deliver services to youth. Four cities have been awarded grants to develop and implement an oversight collaborative group representing all facets of the community, a case management system that puts each youth in contact with one adult who focuses specifically on that youth's needs, integrated services to youth, and a management information system that allows the progress of youth cohorts to be tracked over time.

The National Dropout Prevention Center
Clemson University
205 Martin Street
Clemson, SC 29634-5111
(803) 656-2599

The National Dropout Prevention Center maintains a program profile data base on dropout prevention projects across the United States, publishes a newsletter and other reports on solutions and strategies for dropout prevention, and organizes an annual National Dropout Prevention Conference.

The WAVE (Formerly 70001 Training and Employment Institute)
501 School Street SW, Suite 600
Washington, DC 20024
(202) 484-0103

The goal of Work, Achievement and Values in Education (WAVE) is to help school systems design and implement dropout prevention programs and to provide preemployment training and related services to at-risk youth. The WAVE model is made up of competency-based preemployment training, remedial education, motivational development services, job placement, and follow-up services.

Chapter 3

English: Reading, Literature, and Writing

Current Thinking

The English section of this directory covers three content areas: reading, literature, and writing. Although these areas are presented as three separate sections for the purpose of discussion, many of the instructional approaches, new directions, and promising practices that are described relate to current research and practices all three of the areas.

Reading

Reading competence is basic to the educational process, to success in school, and to independent learning throughout life. When students lag behind in their reading achievement, they find it difficult to benefit from other aspects of the curriculum and are, upon leaving school, more likely to experience unemployment (Ogle, Absalam, and Rogers. 1991).

Despite the importance of reading in the life of a student, data show that the current level of reading performance by American students is by no means exceptional. Trend data (1971-88) from the National Assessment of Educational Progress (NAEP) show that the reading ability of American students ages 9, 13, and 17 is only as good as, or slightly better, than it was two decades earlier. The NAEP data indicate that while most students can read for literal understanding, most cannot analyze or synthesize what they read. Fewer than half of all American 17-year-old students are consistently able to understand, summarize, and explain relatively complex information. Furthermore, when compared with the performance of students from other industrial nations, American students' reading achievement is average or below average (Stevenson 1984).

Instructional Approaches to the Teaching of Reading

The way in which beginning reading is taught in American schools varies greatly across teachers, classrooms, and schools, and reflects elements from a long history of instructional practice. Current approaches incorporate elements of the "teach the code" methodology of the colonial period ("H" is for "hammer") in which attention is focused on learning the alphabet; Horace Mann's "whole word" method of the 1800s, which focuses on reading whole, meaningful words rather than on the letters that make up words; the "comprehension" movement of the 1930s and 1940s, in which words are introduced through their meanings; and the "phonics" methods of the 1950s which emphasize letters and their corresponding sounds.

Two prominent current methods are the basal reader and whole-language approaches.

1. Basal Reader Approach

   - Teachers focus their instruction on commercially developed programs of systematically organized instructional activities for teaching reading skills, comprehension strategies, and the appreciation of literature. Teachers' manuals accompany materials for the students.

- Students are taught in small groups that are formed according to the students' ability to progress through these materials. Instruction frequently is organized around teacher-led "round robin" reading activities, in which each child takes a turn reading aloud.

- The stories, poems, and factual articles in the student textbooks and the accompanying exercises in workbooks provide practice in reading and writing. The selections and exercises are generally age appropriate.

Critics of the basal reader approach argue that the round-robin reading activities are not productive, the selections in the student basal textbooks are not interesting, the exercises in the workbooks have little to do with "real" reading and writing, and the instruction specified in teacher's guides is not effective. Finally, there is concern that the packaged materials are not directly responsive to the needs of individual children or to the particular school and community.

2. Whole-Language Approach

The whole-language philosophy includes multiple beliefs about learning and the social context of learning. This philosophy has directly influenced reading instruction, among other English arts, and is currently very popular among educators.

Characteristics of the whole-language approach include the following:

- Instruction is focused on natural-language materials (such as trade books) and writing that takes place naturally in the classroom. Teachers integrate the reading, writing, and discussion of text. They emphasize comprehension and reasoning during reading, select mostly narrative literature, emphasize process writing, and encourage discussions in which students talk about their interpretations of the literature they have read.

- Children are not grouped according to ability. Rather, teachers work with the entire class, or children with a range of abilities work together in small groups. When necessary, the teacher helps students individually. The Cooperative Integrated Reading and Composition (CIRC) Program (see "Examples of Promising Projects" below), developed by Robert Slavin of John Hopkins University and others, uses cooperative learning team activities that promote growth in reading and language arts for elementary school-age children. Four students work in heterogeneous learning teams developed on the basis of sex, race, reading ability, and special placements.

Critics of the whole-language philosophy contend that there is a seeming lack of systematic instruction and practice, and that the unstructured approach affects the performance of children who are inadequately prepared for the demands of schooling. Others express concern about the lack of research based beginning reading and comprehension practices. Finally, the emphasis on narrative rather than expository writing troubles some educators, who believe that reading only narrative writing does not prepare students for reading in the content areas.

Although the "phonics" versus "whole language" controversy is still debated, with some teachers following one approach to the exclusion of another, most teachers combine features of both approaches in reading instruction. It is not unusual, for example, to see a first-grade classroom in which small-group intensive phonics instruction (more often associated with the basal reader approach) is followed by the entire class's reading student-selected library books (typically associated with a whole-language approach). This balanced approach to beginning reading is addressed in two

major reports: report of the National Academy of Education's Commission on Reading, Becoming a Nation of Readers (Anderson, Herbert, Scott, and Wilkinson 1985) and the report of the Center for the Study of Reading, report Beginning to Read: Thinking and Learning About Print (Adams 1990). Each of these reports emphasizes the importance of including some systematic phonic activities with a number of other activities, such as reading aloud, having good discussions, writing, and, most important, allowing "ample opportunities for the reading and appreciation of informative and engaging texts" (Adams 1990).

The Influence of Cognitive Research on Comprehension Strategies

To read, students must be able to decode words, but they must also be able to obtain meaning from words, sentences, and passages. Cognitive research has contributed significantly to our knowledge of how students comprehend what they read.

Cognitive research indicates that (1) knowledge is gained when learning is active, (2) learning takes motivation and effort, (3) learning occurs when information is tied to a context, and (4) learning is influenced by the environment in which it occurs. Applying this information, researchers like Applebee and Langer (1983) and Palinscar and Brown (1984) have translated cognitive research into models for helping students understand better what they read. These models have the following implications for instruction:

- When students understand what they have read, they do so because they, not the teacher, have found meaning in the text.
- Comprehension activities should be matched to students' existing knowledge and skill levels, but also provide a challenge for new growth.
- Teachers can help students learn new comprehension skills through "supportive" instruction, sometimes called scaffolding, that is, by narrowing the topics considered, providing partial information or ways to think about an idea, helping to tighten an argument or point being made, positing alternative ways to view an issue, restating ideas to help students take stock, or providing information.
- The teacher's role is to guide the student toward an understanding of what he or she has read.
- Students need time to absorb the patterns and approaches practiced with the teacher's assistance to improve comprehension skills.

Literature

The teaching of literature became a mandated part of the English curriculum in American schools in the late 1800s. The resulting benefits of literature instruction are well documented. The study of literature can contribute to intellectual, emotional, and moral growth. It can help students understand their cultural heritage as Americans, as well as increase their appreciation of the beliefs and traditions of other cultures and peoples. Studying literature can also help students develop proficiency in the use of language and reasoning (Applebee 1990).

Despite these considerable benefits, American students' knowledge of literature was shown to be inadequate by the 1985 National Assessment of Educational Progress (NAEP) (Ravitch and Finn 1987). Three-quarters of America's 17-year-old high school juniors were stumped by questions about

some of the nation's most popular writers, among them, Walt Whitman, E.E. Cummings, Henry David Thoreau, and Carl Sandburg.

Instructional Approaches for Interpreting Literature

During the past 50 years instructional approaches for interpreting literature have been influenced by four theories: structuralism, reader-response, the new criticism, and deconstruction. These four theories, which have led to different approaches in interpreting literature, are distinguished mainly by how teachers guide students (1) to find meaning in a text (the meaning is in the text waiting to be found versus meaning is a product of the reader's interaction with the text), and (2) to use information outside the text (the reader's personal, emotional position or the intention of the author) to develop an interpretation of the literature.

1. Structuralism

   This approach was popular in the middle of this century, and vestiges still can be found in classrooms across the country. Teachers employing this approach guide the class in a discussion of a text, in relation to the life and historical world of the author (Abrams 1977).

   Critics of this approach contend that this method presumes too much history and biography and can guide students to believe that there is only one "right" interpretation that the teacher knows and the students must figure out. For those who view literature as an opportunity to develop students' abilities to reason and to think systematically about experiences, the traditional approach has serious drawbacks (Applebee 1990).

2. Reader-Response

   In 1938 Louise Rosenblatt published Literature as Exploration. This book set out a new theory of literary interpretation that emphasizes the importance of an individual's response to and interpretation of a literary work. Teachers who espouse the reader-response approach encourage students to react to the text, reflect upon their responses, and understand what in the work and in themselves produce the reactions. Multiple interpretations are permitted for multiple readers.

   Critics of this approach contend that interpretation should focus more on elements within the text rather than on the reader's response to the text.

3. New Criticism

   This approach, which became popular in secondary schools during the 1960s and continues in use today, is an effort to make the analysis of literature as objective as possible. Typically, instruction involves individual or group discussion and analysis of a text by examining the literary structures of a text. Interpretations of the text are based on elements in the text only. Consideration of the author's intentions is regarded as speculative information that lies outside the text.

   Critics of this approach state that the evolution of a work of literature does not occur outside an author's life and times, and that knowledge of these areas enriches, not detracts from, an interpretation of the literature.

4. Deconstruction

This newest direction in literary criticism was developed during the late 1970s. Deconstructionists believe that a literary work can generate multiple readings or interpretations and multiple meanings, thanks to the author's absence. Furthermore, interpretations of text are not made for the purpose of finding a system of meaning that would necessarily make sense of the piece of literature. When examined closely, all texts are seen to have internal contradictions; deconstructing a text by uncovering these contradictions creates a fundamental indeterminacy in meaning (Derrida 1976).

Teachers should encourage a great range of interpretations for the same work, or segments of the same work. Since finding a comprehensive meaning in the work is not expected, interpretation can focus on segments of the work.

Some critics of deconstruction claim that each literary work has one inherent meaning, not multiple interpretations. Radical deconstructionists claim that the American version of this approach, developed at Yale, is a slick disguise for new criticism and that its advent onto the American critical scene simply "makes no difference" (Fischer 1987).

Although vestiges of structuralist approaches can be found in some elementary and secondary classrooms, the reader-response and new criticism approaches are more commonly used. Deconstruction is currently popular in postsecondary literature classes, but has not significantly affected classes in elementary and secondary school. Typically, teachers of literature blend elements of several of these approaches. They rely on traditional organizational devices such as genre, chronology, and themes for arranging their curriculum, but they also emphasize a personal response to literature that fosters student involvement. In addition they use new criticism approaches to analyze a text by examining multiple literary structures in it (Applebee 1990).

Texts Used in the Classroom

Critics have been arguing since at least the 1960s that the range of works students are exposed to is too narrow. Findings from a comprehensive survey of school literature instruction concluded that school texts are drawn mainly from a white, male, Anglo-Saxon tradition (Applebee 1990). Many schools have made attempts in recent years to include more works by women, minorities, and contemporary authors.

At the same time, some commentators, such as E. D. Hirsch, Jr., in his Cultural Literacy: What Every American Needs to Know, argue that students are not acquiring sufficient knowledge of American and Western cultural traditions to be culturally literate. Hirsch, for example, proposes the use of a "core knowledge curriculum"--a standardized curriculum designed for all students with specificity at every grade level. Recommended reading selections have primarily a classical-traditionalist bent, although some material has been added from minority contributors. The second-grade reading list, for example, includes Hansel and Gretel, an introduction to Greek myths, the story of Abe Lincoln, The Night Before Christmas, Indian folktales, a story about Harriet Tubman, and a Hispanic folktale of birds at the Creation. Hirsch's method emphasizes the need to understand content, as well as develop reading and thinking skills.

Numerous other resources and book lists have been created in recent years to guide educators, parents, and communities in selecting literary works. One of the most notable book lists was developed by the California State Department of Education, which, after extensive consultation with

local educators, published an annotated list of recommended works of literature for children in grades K-12 (California State Department of Education 1989, 1990). Other guides to selected literature include those developed by the National Council of Teachers of English and the International Reading Association.

Experimental efforts to reform literature instruction are now occurring in selected school districts across the country. These efforts include local initiatives undertaken by individual districts, either on their own or in conjunction with university-based researchers, to work out more thoughtful approaches to instruction (Langer 1991), as well as statewide initiatives to train teachers in new approaches. Organizations such as the National Council for Teachers of English are involved in national efforts to inform teachers and others of the state of the art in new areas of scholarship and practice.

Writing

The ability to write is integral to further education, most vocations, and independent living. It is a necessity, as well as a source of pleasure. Yet, data from NAEP surveys conducted over the past 14 years show that many American students have difficulty communicating effectively in writing (Mullis, Owen, and Phillips 1990). With sufficient instruction, most students do manage to master the mechanics of writing (e.g., spelling, grammar, and language usage); even older students, however, have serious problems in composition. The most recent NAEP survey found that only 36 percent of American 12th-graders could write a persuasive letter.

Such findings are not surprising in view of how little time goes into teaching and practicing writing (Mullis, Owen, and Phillips 1990). In a recent NAEP survey, the typical eighth-grade English teacher reported spending no more than one hour per week on writing instruction and assistance. Instead, class time was devoted to exercises in the mechanics of English rather than composition. Even older students encountered minimal writing demands. Most American high school seniors reported that they had written two papers (or fewer) for school during the six-week period before to the survey.

Instructional Approach Writing

Over the past two decades, the focus of instruction has shifted from the written product to the writing process. Now, students are more likely to study what writers think about and the decisions they make, rather than evaluate completed works.

Process Approach

Research on writing over the past 20 years supports the contention that writing is a problem-solving process that involves designing, planning, organizing, structuring, and revising (Hull 1989).

During this process the following classroom techniques, among many others, have been found to be useful to young writers:

- Show students that writing is a process through which a writer's ideas develop, rather than being fully formed in advance (Applebee 1991).

- Emphasize multiple drafts.

- Ask students to plan and revise those drafts.
- Use journals and learning logs.
- Postpone editing until the final draft.
- Provide multiple audiences through peer response groups and the publishing of student work.
- Pair students with different strengths and weaknesses so that peer tutoring can take place (Schilling 1986). Do not place students in ability groups or "tracks" for writing instruction. The Center for the Study of Writing (1990) contends that tracking can relegate lower-track children to instruction that is largely drill and practice, with too little exposure to stories and literary experiences that promote high levels of literacy.
- Adopt the processes used by expert writers (keep writing journals to record feelings, ideas, thoughts, and experiences; experiment with numerous, divergent styles of writing).

Some research indicates that process approaches have not been universally successful in actual classroom practice (Applebee 1981). This is understandable given the variations in teaching this approach--from presenting writing as a rigid set of activities, to providing a range of unconnected activities with little sequence or development. At its best, this approach should be viewed as a process that involves multiple activities depending on the individual writer's goals. This approach requires flexibility from the teacher--students may not always need to revise every written work--and an understanding of the students' goals for the work in progress.

Writing Instruction in English Classes Versus Writing Across the Curriculum

Although most instruction in writing at the elementary and secondary levels is provided in English classes and is dedicated solely to improving writing skills, there is a steady trend to encourage "writing across the curriculum," a movement in which writing is used as a tool for thinking and writing in all courses (Zinsser 1988; Couch 1989). This approach actually began to spread about 20 years ago, and followed the work of James Britton and others in British schools during the 1960s. Some early writing-across-the-curriculum programs were developed to replace abolished English composition courses in the 1970s and 1980s. Today, these programs are generally seen not as replacements for English composition, but rather as a means of enhancing learning in other disciplines. Spearheading this movement is the National Writing Project (see "Sources of Further Information" below), which conducts in-service education for writing teachers at participating university sites across the United States. Through its workshops and institutes, this project is currently providing in-service education to 25,000 of our nation's writing teachers every year.

Beyer (1990) suggests the following guidelines for writing across the curriculum:

- Have students take a position when writing, rather than provide general descriptions.
- Require more than one draft. First drafts generally represent a writer's search for something to say.
- Assign several short papers rather than one long paper, each of which expands or builds on those preceding it.

- o Require students to practice writing to different audiences and use different points of view.
- o Ask students to rewrite when needed.
- o Use writing to advance the study of content.

Teaching Writing to Teachers

There are numerous writing projects for teachers of writing, among them, the Manchester Literacy Evaluation Project (see "Examples of Promising Projects" below). This program provides strategic research interventions in writing (and reading) and encourages the integration of research into classroom practice. Teachers maintain personal portfolios of their writing, and meet with university and research teams to review personal literacy, research data, and classroom practice. The National Writing Project (NWP) (see "Examples of Promising Projects" below) believes that the key agent in educational change is the teacher, and focuses its efforts on teaching teachers from all levels of instruction (elementary through university) to write during intensive five-week summer institutes.

DEVELOPMENT OF NATIONAL STANDARDS

A consortium of professional organizations has begun work to develop voluntary national standards for English education in American schools. Under a grant from the U.S. Department of Education, the University of Illinois Center for the Study of Reading, the National Council of Teachers of English, and the International Reading Association, has embarked on a three-year effort to develop voluntary standards for English, including literature and reading.

Suggested Reading List

READING

Adams, M.J. 1990. Beginning to Read: Thinking and Learning about Print. Cambridge, MA: MIT Press. Argues that educators need not remain trapped in the phonics versus teaching-for-meaning controversy and offers instructional alternatives influenced by cognitive psychology, developmental psychology, educational psychology, education, linguistics, computer science, and anthropology.

Anderson, R., E. Herbert, J. Scott, and I. Wilkinson. 1985. Becoming a Nation of Readers: The Report of the Commission on Reading. Champaign, IL: Center for the Study of Reading. Presents leading experts' interpretations of both current knowledge of reading and the state of the art and practice of teaching reading.

Applebee, A.N., and J.A. Langer. 1983. "Instructional Scaffolding: Reading and Writing As National Language Activities." Language Arts 60(2):168-75. Lays out the principles of instructional scaffolding, including ownership, appropriateness, structure, collaboration, and internalization.

Barr, R., M.L. Kamil, P. Mosenthal, and D. Pearson. eds. 1991. Handbook of Reading Research, Vol. II. White Plains, NY: Longman Publishing Group. Examines literacy through a broad overview of society and literature, a definition of the range of culturally determined activities involved in literacy, an examination of the processes in which individuals engage when they read, a review of how the knowledge that constitutes literacy is passed on from one generation to the next, and a discussion of how to understand progress in reading.

Chall, J.S. 1967. Learning to Read: The Great Debate. New York: McGraw-Hill. Concludes that the first task in learning to read is learning the relationship between sounds and letters-decoding, and that the second task is reading for content and meaning.

DeFord, D.E., C.A. Lyons, and G.S. Pinnell. 1991. Bridges to Literacy: Learning From Reading Recovery. Portsmouth, NH: Heinemann. Discusses the connections that teachers have made between two adjacent ideas in literacy learning: one-on-one instruction and classroom instruction.

Flesch, R. 1955. Why Johnny Can't Read. New York: Harper and Row. Advocates a return to a phonic approach as the best method to use in beginning reading instruction, and challenges the prevailing views of the time--an emphasis on teaching children by a sight method.

Garcia, G.E. and D.P. Pearson. 1991. Literacy Assessment in a Diverse Society, Technical Report No. 525. Champaign, IL: Center for the Study of Reading, University of Illinois at Urbana-Champaign. Examines the extent to which literary assessment measures reflect or distort the literacy performance of students from diverse linguistic, cultural, and economic backgrounds, and warns teachers that they need to increase their knowledge about language, culture, and literacy.

_____**1990. Modifying Reading Instruction to Maximize Its Effectiveness For All Students, Technical Report No. 489. Champaign, IL: Center for the Study of Reading, University of Illinois at Urbana-Champaign.** Discusses how reading instruction should be modified

to encourage the development of comprehension strategies in all children, especially in low-achieving students, reviews current instructional strategies and presents the rationale for a comprehension-based curriculum.

Harste, J. C. 1989. New Policy Guidelines for Reading: Connecting Research and Practice, Report No. 33428-1234. Urbana, IL: National Council of Teachers of English. Presents policy guidelines that emphasize a functional "low-risk" curriculum in which reading and writing are viewed as tools for learning; in which children learn to read by reading and to write by writing; and in which children are permitted to choose reading materials, activities, and ways to demonstrate their understanding of texts.

Mullis, I.V.S., et al. 1990. "Accelerating Academic Achievement: A Summary of Findings from Twenty Years of NAEP." Princeton, NJ: Educational Testing Service. Concludes that the educational performance of U.S. students is low and not improving.

Ogle, L.T., N. Alsalam, and G.T. Rogers. 1991. The Condition of Education: 1991. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Summarizes educational statistics annually and reports federal data collected on educational topics.

Palinscar, A.S., and A.L. Brown. 1984. In "Reciprocal Teaching of Comprehension-Fostering and Comprehension Monitoring Activities." In Cognition and Instruction, David Klahr, ed. Vol. 1, 117-75. Reviews three studies of reciprocal teaching, an intervention aimed at promoting better learning from text by summarizing, generating questions, predicting, and clarifying.

Spivey, N. N. 1989. Construing Constructivism: Reading Research in the United States, Occasional Paper No. 12. Berkeley, CA: National Research Center on Writing and Literacy at the University of California. Reviews research on constructivism and assesses the impact of constructivism on four related issues: readability of texts, assessment of reading ability, reading instruction, and conceptions of literacy.

Stevenson, H. W. 1984. "Making the Grade: School Achievement in Japan, Taiwan, and the United States." Annual Report of the Center for Advanced Study in the Behavioral Sciences. Stanford, CA: Stanford University. Compares school achievement among students in Japan, Taiwan, and the United States.

Vygotsky, L.S. 1962. Thought and Language. Edited and translated by E. Hanfmann and G. Vakar. Cambridge, MA: MIT Press. Asserts, in an examination of the psychological interrelation of thought and language, that language instruction is one of the principal sources of the schoolchild's concepts and, therefore, determines the fate of the child's total development.

LITERATURE

Abrams, M. H. 1977. "The Limits of Pluralism: Deconstructive Angel." Critical Inquiry 3:425-38.
Lays out the principles of the traditional approach to literature, and counters those that espouse the deconstructive and other poststructural approaches.

Applebee, A. N. 1990. "Literature Instruction in American Schools," Report Series 1.4. Albany, NY: Center for the Teaching and Learning of Literature, State University of New

York. Summarizes results from a survey designed to provide a broad portrait of methods and materials used in the teaching of literature.

Applebee, A. N., J.A. Langer, and I.V.S. Mullis. 1987. Literature and U.S. History: The Instructional Experience and Factual Knowledge of High School Juniors. Princeton, NJ: Educational Testing Service. Summarizes 11th-graders' factual knowledge of literature and U.S. history, and indicates that although these students have some knowledge on which to build, their memory of literature facts lags behind social studies knowledge.

California State Department of Education. 1989, 1990. Recommended Readings in Literature. Sacramento, CA: Bureau of Publications Sales/California State Department of Education. Lists recommended readings developed by the California State Department of Education for use in California schools.

Derrida, J. 1976. Of Grammatology. Translated by Gayatri Spivak. Baltimore, MD: Johns Hopkins University Press. Lays out the principles of Derrida's philosophy and theories governing writing and literature. The book became the manual for understanding the deconstructionist approach to literature.

Farrell, E., and J. Squire. eds. 1990. Transactions with Literature: A Fifty-Year Perspective. Urbana, IL: National Council of Teachers of English. Examines the influence of Louise Rosenblatt on the teaching of literature, on literary theory (notably the "reader-response" theory), and on education research in English-speaking nations.

Fischer, M. 1987. Does Deconstruction Make Any Difference? Bloomington, IN: Indiana University Press. Examines the influence of the "deconstruction" movement on literary theory and practice.

Hirsch, Jr., E. D. 1987. Cultural Literacy: What Every American Needs to Know. Boston, MA: Houghton Mifflin. Argues that the goal of education should be mature literacy for all people, including disadvantaged children.

Knoblauch, C.H. and L. Brannon. 1989. Teaching Literature in High School: A Teacher-Researcher Project, Report Series No. 2. Albany, NY: Center for the Learning and Teaching of Literature at the State University of New York at Albany. Describes how, with different approaches, the "best" high school English teachers introduce, undertake, and guide the study of literature in their classrooms.

Krieger, M. 1979. "The Recent Revolution in Theory and the Survival of the Literary Discourses." ADE Bulletin 62:27-34. Identifies deconstructionist and poststructural claims about texts as major threats to the institutionalized study of literature.

Langer, J. A. 1991. "Literary Understanding and Literature Instruction," Report Series 2.11. Albany, NY: Center for the Learning and Teaching of Literature, State University of New York. Details the principles underlying effective literature instruction, which emphasize the development of students' reasoning abilities in the context of their understanding of literature.

Ravitch, D., and C. Finn. 1987. What Do Our 17-Year-Olds Know? New York: Harper and Row. Outlines the results of the first National Assessment of Educational Progress (NAEP) that assessed 17-year-old students' knowledge of history and literature.

Rosenblatt, L. M. 1983. Literature as Exploration. New York: D. Appleton-Century. Furnishes the theoretical basis for the reader-response approach to teaching and studying literature.

WRITING

Applebee, A. N. 1991. "Informal Reasoning and Writing Instruction." In J.F. Voss, D.N. Perkins, and J.W. Segal. Informal Reasoning and Education. Hillsdale, NJ: Lawrence Erlbaum Associates. Reviews recent reforms in writing instruction and suggests that attempts to develop students' reasoning skills will require major reconceptualization of what counts as success in U.S. schools.

_____. 1981. Writing in the Secondary School: English and the Content Areas. NCTE Research Report No. 21. Urbana, IL: National Council of Teachers of English. Reviews the state of the art of writing instruction in secondary schools as currently taught in English classes, as well as in the content areas.

Center for the Study of Writing, 1990. Final Report of the Center for the Study of Writing. Berkeley, CA: University of California. Details the work of the Center for the Study of Writing, including how written language is acquired and can best be taught; writing by diverse populations of learners; and writing to learn in school across the curriculum.

Beyer, B.K. 1980. "Using Writing to Learn in History." History Teacher 13 (February): 167-78. Discusses the writing-across-the-curriculum approach writing in a specific discipline as a method that increases one's knowledge of that discipline.

Couch, R. 1989. "Dealing with Objections to Writing Across the Curriculum." Teaching English in the Two-Year College. 16:(3):193-96. Discusses common criticisms of the "writing across the curriculum" approach and provides solutions to possible problems.

Dyson, A. H., and S.W. Freedman. 1991. Critical Challenges for Research on Writing and Literacy: 1990-1995, Technical Report No. 1-B. Berkeley, CA: Center for the Study of Writing. Reviews the challenges for literacy development in helping educators improve their abilities to help all members of society become literate--across grade levels, social classes, language and ethnic groups, and educational settings.

Dyson, A. H., and S.W. Freedman. 1990. On Teaching Writing: A Review of the Literature, Occasional Paper No. 20. Berkeley, CA: National Research Center on Writing and Literacy at the University of California. Reviews research about writing that may help focus teacher observations, deepen insight, and inform the crucial decisions teachers make about how best to support their students' efforts.

Freedman, S. W. 1991. Evaluating Writing: Linking Large-Scale Testing and Classroom Assessment, Occasional Paper No. 27. Berkeley, CA: National Research Center on Writing and Literacy at the University of California. Focuses on two currently distinct kinds of writing evaluation: large-scale testing and classroom assessment by teachers looking at the writing of their own students.

Hillocks, Jr., G. 1986. Research on Written Composition: New Directions for Teaching. Washington, DC: ERIC Clearinghouse on Reading and Communication Skills. Summarizes and evaluates major writing research from the early 1960s to the early 1980s. Concludes that the

environmental mode of instruction (which emphasizes problem-solving activities) is three to four times more effective than traditional methods of teaching writing.

Hipple, T. 1988. "The Governor's Academy for Teachers of Writing, Tennessee Style." Clearinghouse **61 (9).** Reviews strategies for writing for teachers of writing as well as their students.

Hull, G. A. 1989. "Research on Writing: Building a Cognitive and Social Understanding of Composing." In L.B. Resnick, and L.E. Klopfer. eds. Toward the Thinking Curriculum: Current Cognitive Research. **Alexandria, VA: Association for Supervision and Curriculum Development.** Describes writing as a complex cognitive process embedded in a social context.

Mullis, I. V. S., E.H. Owen, and G.W. Phillips. 1991. "Accelerating Academic Achievement: A Summary of Findings from Twenty Years of NAEP." Princeton, NJ: Educational Testing Service. Concludes that generally the educational performance of U.S. students is low and not improving.

Noguchi, R. R. 1991. Grammar and the Teaching of Writing: Limits and Possibilities, **Report No. 18747-1234. Urbana, IL: National Council of Teachers of English.** Argues that the main reason why formal grammar instruction does not help students improve their writing is that teachers have unrealistic expectations of what grammar can do.

Schilling. D. F. 1986. "Self-Esteem: Concerns, Strategies, Resources." Academic Therapy, **21(3).** Reviews strategies and resources for building self-esteem, and cites writing as one strategy.

Scribner, S. and M. Cole. 1981. The Psychology of Literacy. **Cambridge, MA: Harvard University Press.** Investigates the psychology of literacy and provides a history of language.

Zinsser, W. 1988. Writing to Learn. **New York: Harper and Row.** Draws a connection between writing and learning, and makes an argument for writing as a tool for further learning.

General

Atwell, N. 1987. In the Middle: Writing, Reading, and Learning with Adolescents, **Report No. 22906-1234. Urbana, IL: National Council of Teachers of English.** Describes what the author and her eighth-grade students learned together as collaborating writers and readers.

Dyson, A. H., and C. Genishi. 1991. Visions of Children as Language Users: Research on Language and Language Education in Early Childhood, **Technical Report No. 49. Berkeley, CA: National Research Center on Writing and Literacy at the University of California.** Reviews recent research on oral and written language development in early childhood, and discusses how a vision of young children as active participants in a community has been reflected in and has helped shape research themes and current issues in language arts education.

Marzano, R. J. 1991. Cultivating Thinking in English and the Language Arts, **Report No. 09918-1234. Urbana, IL: National Council of Teachers of English.** Asserts that instruction in English and the language arts can nurture students' thinking processes, and that four patterns of thought are particularly compatible with English/language arts instruction: (1) contextual thinking, (2) thinking that facilitates the construction of meaning, (3) thinking that enhances knowledge development, and (4) thinking that results in higher-order learning.

U. S. Department of Education. 1988. James Madison School. Washington, DC: U. S. Department of Education. Describes the body of knowledge, the common language of ideas, and the intellectual rigor required of a comprehensive curriculum in English (among other disciplines), and provides a plan of instruction for K-12.

Examples of Promising Projects

Reading Recovery

Purpose: To provide a high-quality, intensive intervention to the lowest-achieving 20 percent of a first-grade class, and thereby reduce the need for remediation and other compensatory help in reading.

Description: Reading Recovery provides first-graders who are at risk of failing reading with daily, intensive lessons that use special teaching procedures and immerse children in reading and writing.

Reading Recovery, which continues for an average of 12 to 15 weeks, supplements regular classroom reading instruction with individually tailored, daily 30-minute reading/writing lessons. Each lesson incorporates a variety of reading and writing experiences designed to support the development of effective strategies for reading. After an individual child has made accelerated progress and is reading at the average level for his or her class, that child's place in the program is taken by another eligible student.

Reading Recovery's teacher-leaders are prepared through a year-long course of study at an approved university program that involves special clinical and internship experiences and daily work with children. Once the teachers have successfully completed their training they are qualified to train classes of Reading Recovery teachers.

All teachers have a set of professional books for their own use and a collection of approximately 700 "little books" for children. Books are selected from many early reading books and children's literature. Teachers also use magnetic alphabet letters and blank writing books.

Why It Is Promising: Reading Recovery enables children who are at risk of reading failure to become independent readers functioning within the average range of their class without the need for remedial help. The staff development model develops highly skilled, knowledgeable teachers who can apply concepts in teaching assignments outside Reading Recovery. Teachers are assigned to Reading Recovery for only a half-day; the rest of the day they work in classrooms or help children with remedial reading assignments. Reading Recovery also promotes restructuring of literacy programs in schools, in that it provides for the implementation of new concepts and techniques that have been proved effective.

Evaluation: Evidence from implementation projects in New Zealand and six years of implementation in the United States indicates that Reading Recovery has had positive outcomes for children initially determined to be at risk of failure in reading. The great majority of children who receive a full program in Reading Recovery make accelerated progress and perform within the average range for their classes. Children retain their gains and continue to make progress at least three years after the intervention.

Costs: Costs include the cost of having a teacher work one-on-one with four to five at-risk children, for 30 minutes each, every school day. For the rest of the day, the teacher can be assigned to the classroom or other duties. The cost for materials is a one-time expenditure averaging approximately $1,000 per teacher. Training costs are figured on a tuition basis: Reading Recovery teachers receive nine quarter hours (six semester hours) of graduate credit for the year of training from the teacher-leader. Teacher-leader training at Ohio State University costs approximately $10,000, but costs will vary according to the institution. Teacher-leaders receive 24 quarter hours (18 semester hours) of

graduate credit. For a district or regional training site, training costs involve the employment of a teacher-leader and the installation of a one-way glass and public address system for training teachers.

Where to See It: At selected sites around the country. See contacts listed below.

Contacts:

Diane DeFord
College of Education
Reading Recovery Office
200 Ramseyer Hall
29 West Woodruff Avenue
Columbus, OH 43210-1177
(614) 292-0711

Billie Askew
Texas Woman's University
P.O. Box 23019
Denton, TX 76204-3029
(817) 898-2227

Ron Binkney
Everett Education Center
15 Gibbs Avenue
Wareham, MA 02571
(508) 291-3540

Benchmark School

Purpose: To help students become skilled readers and writers and to experience success in the mainstream not only academically (at the 50th percentile or above), but socially and emotionally.

Description: Benchmark School is a private school that was founded in 1970 by Irene W. Gaskins to verify her belief that all children can be literate. The school began as an experiment in applying research in education and cognition to meet the needs of students with reading problems, especially students who were not classified as requiring special education programs but who were virtual nonreaders. Today, two decades later, the school continues to translate research into classroom practices, allowing all students to experience a sense of achievement despite their learning differences.

The staff believe that the focus for improving education should be on improving instruction and ancillary services to students, not through the development of a new curriculum or the purchase of a set of materials or technology. The philosophy of the Benchmark staff is "all I can change is me." This means that teachers feel accountable for adapting instructional procedures to the individual learning styles of students, rather than searching for one best program or method that might meet the needs of all students. The staff are encouraged to invent new ways to meet the needs of poor readers and have developed approaches to cope with maladaptive cognitive styles, to work as mentors with unresponsive students, and to teach cognitive and metacognitive strategies for learning, thinking, and solving problems across the curriculum. In addition, teachers coordinate the support of parents, psychologists, social workers, language therapists, and other specialists.

Why It Is Promising: Benchmark provides intensive early intervention before students have acquired the emotional scars that accompany repeated academic failure. This intervention is provided in classroom environments that encourage the development of the skills and strategies needed for academic success, where there are high, but realistic, expectations for both student achievement and responsibility. In addition, the staff develop a collaborative relationship with parents, learning from them what does and does not work with their children, and providing parents with educational and psychological support in the form of workshops, weekly newsletters, parent-support groups, and family problem-solving sessions. Parents are encouraged to read to and with their children for at least one-half hour a day, as well as to demonstrate through their actions that they value education as a lifetime pursuit. When a student is ready to be mainstreamed, a full-time placement counselor helps parents find the best educational match for their child. The placement counselor also continues to support former Benchmark students and their families throughout their schooling.

Staff development is highly valued. Students are encouraged to learn as much as possible, to use each minute of the school day in the most productive way possible. An apprenticeship model (each one teach one) is part of the process for training teachers. Teachers new to Benchmark usually begin as teaching assistants working with master teachers.

Cost: The resources needed are as follows: teachers willing to engage in daily professional growth opportunities (the teacher-students ratio is 1-2); teaching assistants who are teachers-in-training (1:12); teacher trainers/supervisors (1:7 teachers); psychological support staff (1:30 students); a leader in staff and curriculum development (1:170 students); 15,000 easy-reading and literature books (some with accompanying read-along tapes); subscriptions to 15 to 20 professional journals; and funding for staff attendance at professional meetings and for nationally known in-service speakers.

Evaluation: The most convincing data regarding the Benchmark program come from the follow-up studies conducted over the past 21 years. For a minimum of five years after a student leaves Benchmark, all school records regarding former Benchmark students are collected from the receiving school(s). Most students enter Benchmark functioning between the 1st and 35th percentiles in reading; after studying in Benchmark, most students function above the 50th percentile in all subject areas, and many former Benchmark students function in the top quartile of their classes. Almost all Benchmark students have graduated from high school, and many have gone on for further education or training.

Contact:

Irene W. Gaskins
Benchmark School
2107 North Providence Road
Media, PA 19063
(215) 565-3741

The Manchester (New Hampshire) Literacy Evaluation Project

Purpose: To help university and public school staff and their students evaluate their reading and writing skills through the development of "literacy portfolios."

Description: All participants, including administrators, professors, doctoral students, teachers, and students, maintain personal portfolios that include samples of their reading, writing, and thoughts. A

basic tenet of this approach is that one's personal writing and reading influences learning, instruction, and self-evaluation.

Twice a month, university and public school staff meet to review their own portfolios, as well as review classroom practice on writing and reading.

In a second year of the program (1991-92), participants help other teachers and administrators in the pilot locations learn more about the portfolio project.

Why It Is Promising: Professionals using this intervention have noted significant changes in students' interest in reading and writing as well as an increased ability to evaluate their work. As students develop their personal portfolio and develop the ability to read and write on a wide range of subjects, general reading and writing skills markedly improve.

Costs: Most of the project costs ($90,000) are for staff, (two professors and three doctoral students). Persons participating in the program do so as part of their normal teaching and administrative duties.

Where to See It: The Manchester Schools. To visit any of the five sites, contact Ms. Jane Kearns, 196 Bridge Street, School Office Building, Manchester, NH 03104. Telephone number: (603) 624-6300.

Contact:
Jane Hansen
William Wansart
Graves Writing Lab
University of New Hampshire
Durham, NH 03824
(603) 862-2279

Cooperative Integrated Reading and Composition (CIRC)

Purpose: To improve instruction in reading and language arts for elementary school-age children.

Description: CIRC is a comprehensive reading and language arts program that was developed in the 1980s by Robert Slavin, Robert Stevens, Nancy Madden, and Anna Marie Farnish. The program uses cooperative learning team activities that have been proved to promote language growth for disabled and other students in grades 1-8. To enhance reading and composition abilities, CIRC unites story-related activities and direct instruction in reading comprehension with an integrated language arts and writing program. In all these activities students work in heterogeneous learning teams developed on the basis of sex, race, reading ability, and special placements, such as special education or Chapter 1. All activities follow a regular cycle that involves teacher presentation, team practice, independent practice, peer preassessment, additional practice, and testing.

Why It Is Promising: CIRC programs are being used in more than 1,000 schools across the nation, with model sites in Pennsylvania, Maryland, Idaho, Texas, and Louisiana. Professionals like the program because effective teaching strategies are incorporated into constructive reading practices, and because the program focuses on the basics of reading for understanding: comprehension and vocabulary. Students are attracted to the program because they are active participants in improving

their own skills as well as the skills of others. Cooperative learning techniques are an important part of the methodology that calls for teams of four students to work together in reading, determining the meaning of the stories read, and conducting follow-up activities, including writing.

Evaluation: The CIRC program has a consistent and educationally significant effect on the reading achievement of students in grades 2-6. Three evaluation studies of the CIRC program (one of which lasted two years) have been published in professional journals. All studies found that students had consistently higher standardized achievement in reading comprehension, vocabulary, and language expression. For example, in one study, CIRC classes gained 30 to 36 percent of a grade equivalent more than control-group students in reading comprehension and reading vocabulary, 52 percent of a grade equivalent more in language mechanics, and 72 percent of a grade equivalent in spelling. On writing samples, CIRC students outperformed control-group students on the rating of organization, ideas, and mechanics. The positive effects of CIRC were equal for students at all levels of prior achievement, including gifted and remedial students. Studies have also shown an improvement in group behavior, individual self-esteem, and acceptance of mainstreamed students.

Costs: The CIRC program is approved by the National Diffusion Network. For each of the two components of CIRC (reading and writing), a minimum of one day of in-service training is recommended for both teachers and administrators. The training cost is $600 a day plus travel expenses. Curriculum materials are available for many commercially published reading materials and many novels.

Where to See It: Obtain information on CIRC Reading sites from the Center for Social Organization of the Schools, Johns Hopkins University, Baltimore, MD 21218.

Contact:
Anna Marie Farnish
CIRC Program, Center for Social Organization of Schools
Johns Hopkins University
3503 North Charles Street
Baltimore, MD 21218
(410) 516-0370

The National Writing Project (NWP)

Purpose: (1) To improve student writing by improving the teaching of writing, (2) to extend the uses of writing in all disciplines, and (3) to extend the professional roles of teachers. A network of collaborative university-school sites based at the University of California, Berkeley, Bay Area Writing Project, serves teachers in all states and regions of the country.

Description: The National Writing Project is based on the premise that the key agent in educational change is the classroom teacher. Each year at NWP sites nationwide, successful teachers of writing from all levels of instruction, elementary through university, are invited to university campuses for intensive five-week summer institutes. The aims of the institutes are simple: to provide a setting in which teachers can demonstrate their own best practices and share classroom successes; to help teachers broaden their teaching skills through an examination of writing theory and research; to give teachers of writing an opportunity to commit themselves intensely and reflectively to the process of writing by writing themselves and by reviewing each others' written pieces in small editing response

groups; and to identify and train a corps of writing teachers who can effectively teach other teachers. After the summer institutes, these teachers join with other NWP teacher-consultants who have participated in previous institutes to plan and conduct year-long staff development workshops on the teaching of writing and other related activities in project sponsored programs in the schools.

The NWP network currently includes 158 sites (144 sites in the United States, 4 sites overseas serving American teachers in U.S. Dependent and Independent Schools, and 10 sites in six foreign countries: Canada, Britain, Australia, Norway, Finland, and Sweden). At present, more than 114,000 teachers participate in NWP programs each year. The project has received major support from the National Endowment for the Humanities, the Carnegie Corporation of New York, and the Andrew W. Mellon Foundation. Individual NWP sites have also received significant private, university, and school support. Sixteen states now support the networks of NWP sites within their state boundaries. In 1991 the National Writing Project became federally supported. In 1987 the NWP was honored by the National Council of Teachers of English as "an exemplary national resource." The project has received numerous awards and recognitions throughout its 18-year history.

Why It Is Promising: NWP is a success model: it promotes what is working in the classrooms of successful teachers. Teachers nationwide respond to the project's teachers-teaching-teachers model because successful teachers are credible to other teachers and are, therefore, the best teachers of other teachers. All NWP programs focus on subject matter that can directly and immediately improve the content and the quality of teaching.

Costs: Costs to schools and districts vary across states and sites. The Bay Area Writing Project, for example, currently charges districts and schools $3,000 for a 10-session, 30-hour program of workshops scheduled throughout the year.

Evaluation: In 1983 the National Writing Project published an NWP evaluation portfolio describing 32 evaluation studies that document the project's statistically and educationally significant gains in improving student writing skills, the project's positive impact on teachers and teaching, and other positive measures of effectiveness. Michael Scriven, the director of a three-year external evaluation of the NWP that was funded by the Carnegie Corporation of New York, stated that the writing project "appears to be the best large-scale effort to improve composition instruction now in operation in this country, and certainly the best on which substantial data are available."

Where to See It: The Bay Area Writing Project at University of California at Berkeley is the initial site and lead agency of the National Writing Project.

Contact:
James Gray
Director, National Writing Project
School of Education
University of California
Berkeley, CA 94720
(510) 642-5345

The California Literature Project

Purpose: To improve the instruction of literature in California schools.

Description: The California Literature Project (CLP) is a statewide initiative, developed in response to public criticism of California schools. It was launched in 1985 by the state superintendent of public instruction with the cooperation of the governor and legislature. The initiative has four elements: (1) a public relations program that is aimed at developing public support for the reading of literature for all students; (2) a materials development program that explains and illustrates the nature of curriculum reform for educators as well as textbook publishers; (3) a review and revision of all tests used in California schools; and (4) staff development, which consists of attendance at a four-week summer institute. Approximately 100 teachers participate in each institute in groups of 20 to 25, with a CLP teacher-leader guiding each group.

The central document of the program is the English Language Arts Framework, an integrated language-arts program for all students that has the following tenets:

- A focus on meaning in high-quality literature. At the base of this tenet is the belief that literature can move the human spirit, encourage students to learn, and elevate common experiences to uncommon meaning.
- The interrelated use of the language arts.
- The use of instructional strategies that help students from diverse backgrounds relate textual experiences to their life experiences.
- Respect for the teacher as the one who chooses and uses instructional materials.

Why It Is Promising: CLP teachers report that students of all achievement levels are now engaging in more sustained reading and writing and discussion when they read literature. Flexibility in the method of instruction (teacher reads, whole class reads, pairs read, or individuals read) and encouragement to provide multiple meanings from one work of literature encourage students to read. Furthermore, as workshops develop and materials multiply, the teacher's influence expands. CLP teachers are now serving on state committees for student assessment, selection of textbooks, review of educational technology, and evaluation of school programs.

Costs: Summer institutes charge $650 tuition per teacher, which is paid by school districts. Tuition fees cover the cost of the summer institute plus two years of follow-up (with the district paying for six release days per year). Salaries and operating expenses for project directors and support staff are paid with state funds; in 1990-91 CLP received 1.2 million dollars to fund 10 regional sites.

Evaluation: An evaluation design is being developed to document the impact of CLP on teachers' instructional practice in the classroom, teachers thoughts about what they teach, ways in which new approaches to the study of literature affect students' learning, and understanding of the patterns of achievement in language arts. This evaluation will begin in 1991-92; a report is to be issued during 1992-93.

Where To See It: CLP has 10 regional sites throughout California. See "Contact" below.

Contact: Twyla Wells Stewart
Executive Director, The California Literature Project
University of California, San Diego
9500 Gilman Drive
La Jolla, CA 92093-0415
(619) 534-1600

Sources of Further Information

National Research Center for the Study of Writing
University of California at Berkeley
School of Education
5513 Tolman Hall
Berkeley, CA 94720
(415) 643-7022

Contact: Sarah W. Freedman, Director

Sponsored by the U.S. Department of Education. The center seeks to illuminate the nature and influence of the communities in which writing and learning take place; conducts research on writing; emphasizes the social context of writing and the interrelated roles of students, teachers, and researchers; produces and disseminates publications; and maintains resource collections.

ERIC Clearinghouse on Reading and Communication Skills

Indiana University
Smith Research Center
2805 East 10th Street, Suite 150
Bloomington, IN 47405-2373
(812) 855-5847

Contact: Carl B. Smith, Director

Sponsored by the U.S. Department of Education. The clearinghouse collects, abstracts, indexes, and disseminates education information relating to research, instruction, and personnel preparation in reading and communication skills; provides reference and referral services; conducts training, seminars, and workshops for affiliated groups, and disseminates analyses and complimentary ERIC products, such as the ERIC Digest, newsletters, and brochures.

Great Books Leader Training Courses

The Great Books Foundation
35 East Wacker Drive, Suite 2300
Chicago, IL 60601-2298
1-800-222-5870

Contact: Alice Letvin, President

Provides training to prepare teachers, volunteers, and librarians to conduct Great Books reading and discussion programs for children and adults. Courses are open to persons who are committed to leading Great Books groups using readings published by the Great Books Foundation. Trainers believe that the Great Books program fosters students' confidence in their reading ability by providing students with a consistent method of thinking about and understanding high quality literature.

International Reading Association

800 Barksdale Road
P.O. Box 8139
Newark, DE 19714-8139
(302) 731-1600

Contact: Peter Mitchell, Executive Director

A nonprofit resource organization for reading teachers, educators, practitioners, and others interested in literacy instruction, which focuses on reading teachers at all levels of education. This organization seeks to improve the quality of reading instruction through the study of the reading processes and teaching techniques; works to increase literacy; serves as a clearinghouse for the dissemination of reading research through conferences, journals, and other publications; and actively encourages lifetime reading habits.

Literacy Volunteers of America, Inc.

5795 Widewaters Parkway
Syracuse, NY 13214
(315) 445-8000

Contact: Jinx Crouch, Director

Offers training and assistance to individuals and organizations in tutoring adults in basic reading and conversational English; provides training materials and services on a national scale to literacy tutorial programs that utilize volunteers. Publishes a quarterly journal, a newsletter, and instructional and training materials and handbooks.

National Council of Teachers of English

1111 Kenyon Road
Urbana, IL 62802
(217) 328-3870

Contact: Miles Myers, Executive Director

Works to improve the teaching and learning of English and language arts at all levels of education; produces and disseminates information and aids for teachers on formulating objectives, creating and evaluating curriculum guides, and planning in-service programs for teacher education; and, provides reference and referral services.

National Council of Teachers of English--Centers of Excellence for Students at Risk

1111 Kenyon Road
Urbana, IL 62802
(217) 328-3870

Contact: Miles Myers, Executive Director

Has been recognizing schools with outstanding English programs as Centers of Excellence for Students at Risk through a national competition since 1985. Elementary and secondary are honor schools for successful English language-arts programs that target students who are at risk of failing or dropping out and students who were not effectively served by traditional instruction. Schools selected as outstanding serve as demonstration centers for other schools.

National Reading Conference

11 East Hubbard Street
Suite 200
Chicago, IL 60611
312 329-2512

Contact: Roberta Seefeldt, Executive Director

Seeks to promote research in and dissemination of information about literacy, literacy instruction, and related fields. This international organization's membership consists primarily of professors from large universities. The group publishes the Journal of Reading Behavior, holds an annual conference, and publishes its proceedings in an Annual Yearbook.

National Research Center on Literature Teaching and Learning

State University of New York at Albany
School of Education
1400 Washington Avenue
Albany, NY 12222
(518) 442-5006

Contact: Arthur N. Applebee, Director

Sponsored by the U.S. Department of Education. This organization seeks to determine how the effective teaching and learning of literature affects the ability of all students to think critically and creatively, not only in literature class, but in all areas; provides an intellectual focus for literature research and practice; conducts research that will contribute to the improvement of teaching and learning; and acts as a clearinghouse to promote good practice in the teaching of literature.

National Research Center on Reading Research and Evaluation

University of Illinois
174 Children's Research Center
51 Gerty Drive
Champaign, IL 61820
(217) 333-2552

Contact: Richard C. Anderson, Director

Conducts research to help the students in our schools become "a nation of readers." The center conducts basic and applied research and engages in practical programs to produce a better understanding of the fundamental nature of reading. The center also investigates the process of how

children learn to read and the role that reading plays in the acquisition of knowledge in the humanities, social sciences, and natural sciences, and disseminates information.

Chapter 4

Mathematics

Current Thinking

Context

Mathematics is the study of pattern and order. It deals with "data, measurements, and observations from science; with inference, deduction, and proof; and with mathematical models of natural phenomena, of human behavior, and of social systems" (National Research Council 1989). Although it has long been recognized that a grasp of mathematics is essential for pursuing the study of science, the understanding of mathematics is necessary for everyone, given the importance of problem solving and creative reasoning in a variety of fields--not to mention the constant media barrage of opinion polls, lottery commercials, charts, tables, and graphs that Americans are exposed to, all of which require mathematical knowledge to decipher.

Despite the importance of mathematical skills and knowledge, it is clear from the 1990 mathematics assessment of the National Assessment of Educational Progress (Mullis et al. 1991) that elementary and secondary schools must take immediate steps to improve mathematics education. Fewer than half (46 percent) of 12th-graders and only 14 percent of 8th-graders have a grasp of topics generally introduced by seventh grade--fractions, decimals, percents, and simple algebra. Only 5 percent of 12th-graders and almost no 8th-graders showed an understanding of geometry and algebra that suggested preparedness to study more advanced mathematics. International achievement comparisons are equally embarrassing. In the Second International Mathematics Study (McKnight et al. 1987), U.S. students ranked well below students in many of the other countries included in the study. Even the best of U.S. students, those who were enrolled in Advanced Placement classes, were below the median of Japanese students.

Reforming Mathematics Education

Reform of the mathematics curriculum began in the late 1970s, when the mathematics community started discussing its concerns about mathematics education. Various committees and reports followed, and in 1985 a commission was formed by the National Council of Teachers of Mathematics (NCTM) to formulate evaluation and curriculum standards for school mathematics. Through the NCTM, many classroom teachers, mathematics educators, and mathematicians became involved in drafting the standards, and public hearings were held with parents and community leaders. After several drafts, the NCTM's Curriculum and Evaluation Standards for School Mathematics was published in 1989. A companion volume, Professional Standards for Teaching Mathematics, was released in 1991, the outcome of a separate NCTM Commission building on the 1985-89 work. More than 40 professional organizations have endorsed the NCTM Curriculum and Evaluation Standards. The Professional Standards for Teaching Mathematics, released in March 1991, contain guidelines for using the curriculum and evaluation standards and include a focus on the preservice and continuing education of teachers of mathematics at all levels.

Emphasizing Concepts

In mathematics, opportunity to learn is key. In contrast to other countries, students in the United States are exposed to a repetitious, slow-moving curriculum. Elementary and middle schools overemphasize arithmetic skills. Most topics receive only brief coverage, yet the same areas are covered over again year after year, with a steady decrease in new content up to eighth grade. Little time is spent on problem solving, on conceptual understanding, or applications. Although research shows that even very young children learn best if facts, skills, concepts, and applications are intertwined, mathematics has long been dominated by the notion that so-called lower-level learning, such as arithmetic computation, must precede so-called higher-level learning in strict linear fashion. As a result, children are denied access to real-world problems and to interesting topics and concepts, while they are drilled over and over in an effort to develop their rote mastery of computational skills. No other subject is taught this way.

The Standards propose significant changes in what is taught in mathematics classes and in how to evaluate classroom learning. They hold that mathematics should be taught in such a way that everyone can acquire the mathematical power that is essential in a technological society. The Standards argue that mathematics should be seen as something one does--solve problems, communicate, reason--rather than a set of rules; that the mathematics curriculum for all students should include a broad range of content in a variety of contexts; that learning mathematics is an active, constructive process; and that instruction should be based on real problems. The Standards urge that all students should study important mathematical concepts in geometry, algebra, probability, and statistics, beginning in the earliest grades.

Focusing on Problem Solving

The Standards call for increased emphasis on problem solving, but not in the sense of assigning a greater number of the sort of word problems typically found in textbooks. These usually feature a page of identical problems, in which only the quantities change: "Bill has three marbles; if he gives one to Betty, how many does he have left?" "Susie has five cookies; if she gives two to George, how many does she have left?" These problems are not real; they are simply disguises for number sentences. Students soon learn that to solve problems in mathematics, they should ignore the words and instead figure out which operation is being used. Rather than providing new insights or encouraging students to think, these problems are simply another form of drill.

The type of problem solving that the Standards envision is something closer to what is found in the typical Asian classroom. Stigler and Stevenson (1991), in a comparison of Asian and American classrooms, found that Asian teachers are more likely to use concrete objects and real-world problems to encourage students to connect mathematical operations with meaningful experiences. An entire class period may be devoted to discussing one or two problems, which are designed to move students from a concrete situation, such as figuring out which one of six containers holds the most water, to an understanding of abstract representations of mathematical ideas, such as a graph showing the results of the water problem. Arithmetical calculations are incorporated into problem solving as they arise naturally, which provides students with a context for understanding the purpose of these operations.

Employing Varied Instructional Techniques

Even in the upper grades, instruction in mathematics almost exclusively employs teacher talk and individual "seat work", with few materials used other than pencil, paper, and textbook. Both the 1986 and 1990 National Assessment of Educational Progress (NAEP) found heavy reliance on

worksheets and textbooks, with little use of hands-on materials, calculators, or computers, and with innovative techniques such as independent projects being employed only rarely. There is some evidence that teachers are more likely now than in 1986 to have students work in small groups, at least occasionally (Dossey et al. 1988; Mullis et al. 1991).

Moreover, students who are tracked into low-ability classes are more likely than others to be given worksheets; in low-ability classes, teachers are more likely to concentrate on basic computation at the expense of other topics--so that the very students who would undoubtedly benefit most from innovative instruction and interesting curriculum are the least likely to receive them.

NCTM's Standards advocate that classrooms should function as mathematical communities rather than as mere collections of individuals working in isolation from one another; that mathematics teaching should stress conjecturing, inventing, and problem solving over mechanistic answer finding, and that it should move away from memorizing and toward mathematical reasoning. Rather than treating mathematics as a body of isolated concepts and procedures, teachers should work to connect mathematical ideas and applications. Examples of innovative techniques include the use of hands-on materials, small group and whole-class cooperative problem solving, and individual and group projects.

Emphasizing Active Learning

Research has found that, far from being passive, empty vessels who arrive at school ready to have information poured into them, "'children actively construct knowledge for themselves through interaction with their culture and environment' [Resnick 1987]. They invent a great deal of their own mathematics through a broad array of naturally occurring, everyday experiences" (Mullis et al. 1991). Research also shows that "the current mathematics curriculum fails to capitalize on the rich informal mathematics knowledge and understanding that children bring to instruction, and that school mathematics often seems divorced from such familiar activities" (Mullis et al. 1991). For example, even very young children know the difference between one cookie and more than one, and they know that if you take one of their cookies away they will have fewer than they did before. Researchers have shown that young children who know how to count can use their knowledge to solve arithmetic problems that would ordinarily be considered too advanced for them (Means and Knapp 1991).

If instruction can build on the knowledge and abilities that children already possess, children will find that mathematics makes sense--that it has to do with what they know about how the world works, not with arbitrary rules and formulas that they must accept as true because the teacher or the textbook says so. And, equally important, instruction that makes use of children's informal mathematics knowledge will help them learn to trust their own abilities and to see mathematics as something they can do.

Ensuring Equity

All American students are hampered by the prevailing notion that success in mathematics depends on some mysterious, and rare, innate ability--as if doing well in mathematics were the scholastic equivalent of running a four-minute mile or composing a symphony. Whereas many Asian parents see success in mathematics as dependent on effort, and thus expect and encourage their children to succeed through hard work, American families are more likely to excuse their children as lacking the magic inner talent--and to discourage them from trying harder, because they are not "good at math."

But women of all races and backgrounds, minority men, particularly blacks, Hispanics, and Native Americans, and students with disabilities bear an even heavier burden. They often find themselves actively or subtly discouraged from achieving success in mathematics by families, classmates, teachers, and society at large--all telling them that mathematics is unfeminine and "too hard," especially for nonwhites. Add to this the practice of tracking black, Hispanic, and Native Americans students into lower-level mathematics courses with endless repetition of content and boring instructional methods, and it should be no surprise that expectations for poor performance can become self-fulfilling prophecies.

For example, parents who think that boys are naturally better at mathematics than girls tend to have distorted views of their children's ability, thinking that their daughters have lower mathematics ability, and their sons have higher, than objective measures indicate. Parents who believe that girls and boys are equally capable have a more accurate view of their children's abilities. And children's assessment of their own ability reflects that of their parents (Eccles 1991).

Along with improving the quality of instruction that all students receive, mathematics education reform must ensure that female and male students of all races and backgrounds, with and without disabilities, receive continuing and unambiguous messages that success in mathematics is not only possible for all, but expected. Whether it be through efforts such as mentor programs, parent involvement projects, and in-class study of how adults from a variety of backgrounds use mathematics on the job, or through direct encouragement and support from teachers and parents, students must be taught that they can succeed in math.

Strengthening Teacher Preparation

The Standards place immense demands on teachers, students, schools, and teacher educators. The type of instruction envisioned by the Standards requires teachers to be confident of their own mathematical ability and comfortable with new kinds of interactions with students--group discussions, for example--as opposed to dealing with students working individually at the board or on worksheets at their desks. Teachers must be open to helping students explore a variety of possible avenues to obtaining an answer, rather than teaching one procedure for finding an answer. Teachers must also expend time and creative effort in developing new approaches to instruction using real-life problems and hands-on materials, rather than relying on a textbook.

Unfortunately, teachers often are not confident of their own mathematical ability--particularly because many of them have a poor background in mathematics coursework. According to the Council of Chief State School Officers, only 42 percent of today's high school mathematics teachers majored in mathematics (Blank and Dalkilic 1991). The problem is worse in elementary and middle schools. Elementary teachers commonly have taken only a few mathematics courses. Only 18 percent of elementary school teachers--and just 14 percent of middle-school teachers--meet standards of content background recommended by NCTM.

To improve teacher confidence, content knowledge, and familiarity with instructional innovations will require massive, systemic inservice activities; school administrators must also be included to enlist their support in reform efforts.

Future Directions for Reform

The Standards are meant to provide guidelines for states and districts, and are not designed as a reform project to be piloted at certain sites. The Standards encourage reform by providing a

framework for teachers to reassess what they are doing in the classroom, to change the ways they teach, and to raise expectations about what all students can learn and all teachers can teach. They also call on parents, educators, and business and government leaders to become partners in change. A number of states and local districts have launched reform efforts in line with the Standards.

Acceptance of the NCTM Standards is broad, but it is not unanimous. Some educators have expressed concern about the reduced emphasis on computational skills. Reaction by the general public to advocacy of the use of calculators and computers in classrooms has been mixed, although these devices are ubiquitous in homes and in business, industry, and research--the world of further education and employment that awaits all students.

At the same time the Standards were being developed, the Mathematical Sciences Education Board (MSEB) of the National Research Council, National Academy of Sciences, launched a national reform of school mathematics based on the concept of national standards with local implementation. Through a series of conferences, documents, and committee activities, MSEB set out to change the nature of mathematics education in this country, with the NCTM Standards as the centerpiece. The board's most recent effort was a Mathematics Assessment Summit in April 1991, attended by more than 600 persons from across the country. The result of the summit was a call for new assessment measures in mathematics that would adequately reflect the type of learning advocated in the NCTM Standards.

Changing the mathematics curriculum of the United States remains a daunting undertaking. It will take strong commitment by local, state, and federal officials to provide for this effort. All Americans must recognize that mathematics reform is vital to our country's future.

Suggested Reading List

Blank, R., and M. Dalkilic 1991. State Indicators of Science and Mathematics Education: 1990. Washington, DC: Council of Chief State School Officers. Analyzes state-by-state data on elementary and secondary school indicators from 1988-89, gathered by the State Education Assessment Center of the Council of Chief State School Officers.

Cohen, D.K., D.L. Ball et al. 1990. Special issue devoted to implementation of the California Mathematics Framework. Educational Evaluation and Policy Analysis Vol. 12:233-353. Focuses on the implementation of the California Mathematics Framework.

College Board. Advanced Placement Program: National Summary Information 1987/1988. Princeton, NJ: Advanced Placement Program, 1988. Describes the current Advanced Placement program and provides statistical tabulations for participation of high school students in the program by subject, ethnic background, sex, grade level, and college attendance.

Collis, K.F., and T.A. Romberg. In press. "Assessment of Mathematical Performance: An Analysis of Open-ended Test Items." In M.C. Wittrock and E.L. Baker, eds., Testing and Cognition. Englewood Cliffs, NJ: Prentice-Hall. Applies theory and research from cognitive psychology to the improvement of assessment procedures in the teaching of mathematics and discusses several practical techniques for assessing the understanding of mathematics.

Confrey, J. 1987. "Mathematics Learning and Teaching." In V. Richardson-Koehler ed., Educator's Handbook: A Research Perspective. New York and London: Longman, 1987. Discusses evidence that points to a systematic exclusion and lack of encouragement in the teaching of mathematics to young women and minorities, which in turn leads to poorer performances by these groups on achievement measures.

Dossey, J., I. Mullis, M. Lindquist, and D. Chambers 1988. The Mathematics Report Card: Are We Measuring Up? Princeton, NJ: Educational Testing Service. Presents key findings from the 1986 National Assessment of Educational Progress (NAEP) in mathematics, including trends, achievement, instructional patterns, technology, coursetaking, and attitudes.

Fennema, E., T.P. Carpenter, and P.L. Peterson. In press. "Learning Mathematics with Understanding." In J. Brophy, ed. Advances in Research on Teaching, Vol. 1. Greenwich, CT: JAI Press. Describes a math program that uses cognitively grounded instruments that enable teachers and students to make decisions that enable the students to learn mathematics with increased understanding.

Fennema, E., T.P. Carpenter, and S. J. Lamon, eds. 1991. Integrating Research on Teaching and Learning Mathematics. Albany: University of New York (SUNY) Press. Presents papers from a conference sponsored by the National Center for Research in Mathematics (NCRMSE) whose mission is to provide a research base for the reform movement in school mathematics.

Lapointe, A.E., N.A. Mead, and G.W. Phillips 1989. A World of Differences: An International Assessment of Mathematics and Science. Princeton, NJ: Educational Testing Service Summarizes the results of an assessment of mathematics and science achievement and a questionnaire given to students from five countries and four Canadian provinces and compares achievement, experiences and attitudes across the international sample.

Lampert, M. 1988. The Teachers's Role in Reinventing the Meaning of Mathematical Knowing in the Classroom, Research Series No. 186. East Lansing, MI: Institute for Research on Teaching. Describes a research project examining an approach to connecting school study of mathematics with mathematics as a discipline. Fifth-grade students were taught to examine the hypotheses about mathematical structures that underlie their solutions to problems.

Leinhardt, G. 1989. "Math Lessons: A Contrast of Novice and Expert Competence," Journal for Research in Mathematics Education 20:52-75. Discusses components needed by teachers to develop expert mathematics lessons (rich agendas, consistent but flexible lesson structures, and clear, understandable explanations), which are illustrated by comparing two novice and four expert elementary mathematics teachers.

Lovitt, C, M. Stephens, D. Clarke, and T.A. Romberg 1990. "Mathematics Teachers Reconceptualizing Their Roles." In T.J. Cooney and C.R. Hirsch, eds., 1990 NCTM Yearbook: Teaching and Learning Mathematics in the 1990s. Reston, VA: National Council of Teachers of Mathematics. Describes elementary and secondary mathematics teachers engaged in changing, expanding, and improving their classroom practice with a focus on processes that are proving to be successful in the Australian Mathematics Curriculum and Teaching Program.

Mathematical Sciences Education Board. 1991. For Good Measure: Principles and Goals for Mathematics Assessment. Washington, DC: National Academy Press. Presents the agreements on principles and goals for mathematics assessment reached at the 1991 National Summit on Mathematics Assessment at the National Academy of Sciences. The agreements are designed to form a foundation for the development of national standards for mathematics assessment.

McKnight, C., F. Crosswhite, J. Dossey, G. Leifer, J. Suafford, K. Travers, and T. Cooney. 1987. The Underachieving Curriculum: Assessing U.S. School Mathematics from an International Perspective. Champaign, IL: Stipes Publishing. Presents findings from the Second International Mathematics Study, which investigated the status of the curriculum, achievement, and instructional practices at grades 8 and 12 in about 20 countries. U.S. students were compared with students from other countries in terms of achievement, attitude, and opportunity to learn.

Means, B., and M.S. Knapp, eds. 1991. Teaching Advanced Skills to At-Risk Students. Menlo Park, CA: SRI International, 1991. Presents six papers on instructional models that have proved highly successful in teaching such advanced skills as reading comprehension, written composition, and mathematical reasoning to students who generally would be expected to fare poorly in a typical school program.

Mullis, Ina V.S., Mullis, I., J. Dossey, E. Owen, and G. Phillips. 1991. The State of Mathematics Achievement: NAEP's Assessment of the Nation and the Trial Assessment of the States. Princeton, NJ: Educational Testing Service, 1991. Presents key findings from the 1986 National Assessment of Educational Progress (NAEP) in mathematics, including trends, achievement, instructional patterns, technology, coursetaking, and attitudes. Information on eight grade achievement is presented on a state-by-state basis.

National Council of Teachers of Mathematics. 1989. Curriculum and Evaluation Standards for School Mathematics. Reston, VA:NCTM. Describes and discusses a set of standards for mathematics curricula (K-12) and for evaluating the quality of both the curriculum and student achievement.

_____. 1991. Professional Standards for Teaching Mathematics. Reston, VA: Author. Describes and discusses a set of standards for mathematics teaching. Encourages teachers to move beyond traditional yet ineffective methods.

National Council of Teachers of Mathematics Research Advisory Committee. 1991. "NCTM Curriculum and Evaluation Standards for School Mathematics: Responses from the Research Community," Journal for Research in Mathematics Education 19:338-44. Discusses the research base for the recommendations made by the NCTM Standards for School Mathematics Committee and the agenda for new research implied by the standards.

National Research Council. 1989a. Everybody Counts: A Report to the Nation on the Future of Mathematics Education. Washington, DC: National Academy Press. Describes the urgent national need to revitalize mathematics and science education.

_____. 1989b. Reshaping School Mathematics: A Philosophy and Framework for Curriculum. Washington, DC: National Academy Press. Proposes a framework for reform of school mathematics mainly through reshaping of the mathematics curriculum. Discusses the nature, goals, and changing conditions of mathematics education and recommends research-based changes.

_____. 1990. Precollege Science and Mathematics Teachers--Monitoring Supply, Demand, and Quality. Washington, DC: National Academy Press. Evaluates statistics on supply, demand, and quality of science and mathematics teachers and concludes that the available data are inadequate.

_____. 1991. Moving Beyond Myths: Revitalizing Undergraduate Mathematics. Washington, DC: National Academy Press. Cites exemplary programs that point the way toward achieving the same world-wide preeminence for mathematics education that the United States enjoys in mathematical research.

Resnick, L. Education and Learning to Think. Washington, DC: National Academy Press, 1987. Reviews recent research from psychology and education on how children acquire complex thinking skills and learn to reason, and how the schools can teach such skills more effectively.

Romberg, T.A., E.A. Zarinnia, and K.F. Collis. 1990. "A New Worldview of Assessment in Mathematics." In G. Kulm, ed., Assessing Higher Order Thinking in Mathematics. Washington, DC: American Association for the Advancement of Science. Explores current theory, research, practice, and policy in the assessment of higher-order thinking in mathematics, focusing on the elementary and secondary grades. Presents information on new assessment technologies, including computer-based approaches.

Romberg, T.A. 1988. "Can Teachers Be Professionals?" In E.A. Grouws, T.J. Cooney, and D. Jones, eds., Effective Mathematics Teaching. Reston, VA: National Council of Teachers of Mathematics. Describes conditions that would provide the basis for a new, more professional conception of the job of mathematics teaching.

Saxon, J. 1984. "The Way We Teach Our Children Math is a Disgrace" American Education 20 (no. 4):10-13. Criticizes current methods of mathematics instruction and math textbooks for lacking review, repetition, and logical sequencing.

Shiba, S. 1986. "The Excellent Education System for One and a Half Million Children" Programmed Learning and Educational Technology 23 (no. 4):306-30. Describes the Kumon Method, an educational approach developed in Japan that focuses on instruction in arithmetic computation for primary school students.

Steen, Lynn Arthur, ed. 1990. On The Shoulders of Giants: New Approaches to Numeracy. Washington, DC: National Research Council, National Academy Press. Presents five ways for school mathematics to help schools meet the changing uses for mathematics in current and future society.

Stigler, J.W. and H.W. Stevenson. 1991. "How Asian Teachers Polish Each Lesson to Perfection" American Educator, (Spring): 12-20, 43-47. Describes characteristics of Japanese and Chinese mathematics classes that may contribute to the superior performance of Asian students in comparison with American students.

U.S. Department of Education. 1978, 1988. James Madison Elementary School. Washington, DC: U.S. Department of Education. Describes the body of knowledge, the common language of ideas, and the intellectual rigor required of a comprehensive elementary school curriculum, including science.

Westat, Inc. 1988. Tabulation for the Nation At Risk Update Study as Part of the 1987 High School Transcript Study. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Analyzes high school transcript data as part of the Nation At Risk Study. Lists the courses the students took in the various disciplines and provides summaries across the categories of race/ethnicity and sex, among others.

Weiss, I.R. 1988. "Course Background Preparation of Science Teachers in the U.S.: Some Policy Implications." In A.B. Champagne, ed., Science Teaching: Making the System Work. Washington, DC: American Association for the Advancement of Science. Describes the course background preparation of science teachers, presents the results of additional analyses comparing science teacher preparation with the preservice preparation standards recommended by the National Science Teachers Association, and discusses some of the policy implications of these data.

Examples of Promising Projects

First-Level Mathematics (Kindermath)

Purpose: To teach the fundamentals of mathematics to children in their first year of mathematics instruction, thereby facilitating acquisition and understanding of basic math concepts and relationships and providing a firm foundation for development of higher math skills development.

Description: First-Level Mathematics is a 90-lesson diagnostic/prescriptive sequential curriculum for individual developmental growth. Key features are developmental hierarchies, mixed instructional modes, individually paced learning, and extended curriculum range. Teachers are trained to assess the various developmental levels of their students using a curriculum-based assessment that is part of the program. Teachers then use the results of this test in presenting experiences to students in developmental sequence. Understanding takes place through assimilation and the use of concrete objects, rather than rote memorization.

Objectives are organized around miniature lesson plans, complete with materials, method, and evaluation. Instruction is done through small groups and individual activities. Typically there are three or four instructional groups in each classroom. Instructional periods occupy 20 to 30 minutes of each day.

The program can be used for both regular and special education classes and is available in English and Spanish. In addition to the original curriculum materials (lessons/manipulatives), a 13 disk tutorial computer software system is available, but is not essential to the use of the program.

Why It Is Promising: The curriculum is based on knowledge of child development and cognitive growth. The learning objectives and the experiences used to reach them follow a hierarchy that begins with simple classification of concrete materials based on their physical properties. It then progresses through a series of 90 learning objectives to the higher level skills of addition, subtraction, and the use of symbols involved in arithmetic concepts.

Costs: The instructional kit with manipulatives costs $60 per classroom. Software is optional.

Evaluation: Children participating in First-Level Mathematics in their first year of mathematics instruction have made statistically significant and educationally important gains relative to national norms on three standardized tests of math achievement. These results were obtained for three different methods of program delivery during two different evaluation periods: 1982-83 and 1985-86. First-Level Mathematics has been recognized as an exemplary project by the Department of Education; Office of Educational Research and Improvement.

Where To See It: First Level Mathematics can be seen at more than 50 demonstration sites throughout the United States.

Contact: Mary Alice Felleisen
PRIMAK Educational Foundation
38 North Waterloo Road
P.O. Box 701
Devon, PA 19333
(215) 687-6252

Success Understanding Mathematics (SUM)

Purpose: To develop mathematics understanding in students from grades 2-6, particularly students achieving below expectation.

Description: This is a comprehensive mathematics program using concrete objects and questioning techniques. Instruction is predicated on the principle that elementary school children can manipulate concrete materials better than abstract thoughts. Teachers thus guide students to develop mathematical concepts as students solve problems by moving objects.

Why It Is Promising: Special features include materials flexible for use with any commercial text, criterion-referenced tests, in-service training for teachers with follow-up visits, and an emphasis on parental involvement.

Costs: Use of concrete manipulative material is encouraged, and SUM provides a variety of materials packages at roughly $25 per teacher; total cost depends on materials currently in use. Training is available on a consulting basis. Program costs can be tailored to individual school budgets.

Evaluation: Measurable gains among Chapter 1 students have been recorded by the Metropolitan Achievement Test and the Iowa Test of Basic Skills.

Where to See It: SUM is used in more than 2000 schools nationwide. Key demonstration sites are in Des Moines, Schenectady, and Louisville.

Contact: Kathleen Bullington
Project Director, Success Understanding Mathematics
Des Moines Public Schools
1800 Grand Avenue, Room 317B
Des Moines, IA 50309
(515) 242-7860

Family Math, Lawrence Hall of Science

Purpose: To encourage students, particularly women and minorities, to persist in mathematics; to avert "math phobia", by helping participants learn that math can be enjoyable and fascinating; and to help participants develop an active curiosity about math concepts and applications.

Description: Family Math is a supplemental K-12 program that involves teachers, parents, and students in active hands-on learning about mathematics. A Family Math course typically includes six to eight sessions of one to two hours each. Parents and their children attend together, taking part in activities that include arithmetic, calculators, geometry, probability and statistics, logic, estimation, and measurement. Families use manipulatives, hands-on activities, explorations, communication and discussion, cooperative learning, and a variety of problem-solving strategies. Parents become familiar with the changing content and instructional strategies in mathematics reflecting the national effort to

reshape schools. Family Math also provides parents with suggestions for math activities that the family can do at home.

Why It Is Promising: Family Math promotes direct parental involvement in their children's math learning and helps parents understand changes in the mathematics curriculum.. The program provides a venue for entering school activities that has been successful at involving English-as-a-Second Language and low-income parents.

Costs: Approximately $5 per family for materials for a six-week session for materials, plus an honorarium paid to instructors.

Evaluation: Family Math has resulted in increased parental involvement in their children's math activities. The program improves parents' perceptions and attitudes toward mathematics and increases their ability to help their children with math learning. Family Math also enhances teachers' classroom problem-solving approaches and appreciation for children's thinking and understanding of mathematics.

Where To See It: Family Math has spread from California to a total of 49 states. There are 25 active training sites that provide in-service and workshops on teaching Family Math. Exemplary sites include San Diego, New York City, and Portland, Oregon.

Contact: Virginia Thompson
Director, Family Math
Lawrence Hall of Science
University of California
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Decision-Making Math (DMM)

Purpose: To ensure that all students become mathematically powerful problem solvers by teaching students in grades 7-9, a step-by-step plan for solving math problems successfully.

Description: DMM provides problem-solving strategies that teachers can isolate, teach, and then integrate into the curriculum within an interactive classroom environment. A variety of methods are used to promote understanding, such as questioning and planning, interpreting and verifying, solving problems within a cooperative learning environment, organizing and manipulating data, and analyzing and applying solutions. Throughout the program and training the emphasis is on process rather than solution.

The four components of the program include a student guide that teaches students a four-step process of "understand, plan, answer, and check" and leads them through a series of problem-solving strategies; instruction on how to interpret and develop graphs, tables, charts, and maps; presentation of a variety of career applications; and a component where students work cooperatively to solve non routine problems. The program is designed for teachers to use for approximately one-fifth of their class time; however, DMM does not require a restructuring of the curriculum.

Why It Is Promising: Decision-Making Math enables teachers to create a problem-solving climate in their classrooms and provides a concrete set of problem-solving tools that students can use both inside and outside of the classroom. The skill areas taught in Decision-Making Math are recognized by foremost educational researchers as having critical importance for the nation's students. DMM addresses the national need to create a classroom climate that encourages and develops the more sophisticated mathematics skills of communication and reasoning, as outlined in the NCTM Standards.

Costs: Start-up cost per classroom is $99 for purchase of the DMM Curriculum materials, which include the DMM Binder, 16 Student Workbooks, and 128 Strategy Practice Cards. One-day in-service training is available and highly recommended. Additional costs include a consultancy fee, travel time, and travel and per diem expenses. These costs can be shared among schools and with the National Diffusion Network State Facilitator Projects. DMM also provides grant-writing support for implementation efforts.

Evaluation: Use of the program has resulted in significant gains in student achievement as measured by the Comprehensive Test for Basic Skills (CTBS). Decision-Making Math has been recognized as an exemplary project by the Office of Educational Research and Improvement. The program includes an evaluation instrument to be used by classroom teachers (a criterion-referenced test) as well as unit check-up measures to provide ongoing assessment of student progress. Many states are currently using DMM to help prepare their students for the new open-ended, not-routine problem-solving components of their standardized tests.

Where to See It: DMM is currently in its fourth year with the U.S. Department of Education's National Diffusion Network. It is in place in more than half the states, being used by approximately 1,000 teachers and 68,000 students.

Contact: Kristine A. Shaff and Laura Dunn
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San Francisco, CA 94114
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University of Chicago School Mathematics Project (UCSMP)

Purpose: To provide an innovative mathematics curriculum for grade 7-12.

Description: The UCSMP series was developed with support from the Amoco Foundation, Ford Motor Company, Carnegie Corporation, and General Electric Foundation. Courses include Transition Mathematics; Algebra; Geometry; Advanced Algebra; Functions, Statistics, and Trigonometry with Computers; and Pre-Calculus and Discrete Mathematics.

The features that distinguish UCSMP materials from most existing texts include their wider scope, with geometry, and some discrete mathematics occurring in all courses; the integration of statistics and probability into the study of algebra and functions; and the integration of history and recent developments in mathematics woven throughout. Moreover, reading and problem-solving skills are developed through the reading selections and problem sets applying the reading in each lesson. Each mathematical idea is studied in action through practical problems drawn from everyday life. UCSMP

fully utilizes the available technology, requiring students to use scientific calculators in all courses; computer work is included in all courses and is central to the fifth course; and function-graphing technology is used in the last three courses. The instructional format maximizes learning by combining continual review with a modified mastery learning strategy.

Each year in August on the University of Chicago campus, UCSMP holds day-long workshops, each devoted to a single UCSMP course. This in-service training provided free of charge and open to everyone who will be teaching or supervising with the materials in the upcoming school year. In addition, the annual UCSMP Secondary Conference in November offers both users and prospective users an opportunity to learn more about the project.

Why It Is Promising: The first secondary mathematics curriculum to fully implement the NCTM Standards, the UCSMP series is also the first to sequence applied and pure mathematics carefully. Perhaps the fundamental feature of UCSMP is its focus on upgrading the mathematics experience of the typical student. From its beginning in 1983, UCSMP scoured the world for the best ideas available. Never-before translated materials from the Soviet Union, Japan, and elsewhere provided fresh, effective ideas for the materials and broadened UCSMP's perspective. Most foreign educators (and parents) expect mathematical success from all students.

Costs: All course materials, including student texts, teacher editions, and full ancillaries (test, quizzes, lesson masters, visual aids, computer masters, software, and a manipulatives kit) are now available from the publisher, Scott Foresman. For textbook prices and information about users in your area, contact a local Scott Foresman representative or call (800) 554-4411.

Evaluation: National studies covering the first four courses of the curriculum indicate that UCSMP classes outperform comparison classes on a wide variety of objectives. For example, in 1985-86, Transition Mathematics students outperformed comparison students significantly in geometry and algebra readiness and became effective users of calculators without losing ground on traditional arithmetic skills. In 1988-89, a study of UCSMP Geometry revealed that students with previous UCSMP experience began the year with substantially more algebra and geometry and maintained superiority in all aspects of the course. Completed reports are available to the public and may be ordered from UCSMP.

Where to See It: School districts in virtually every state have implemented the UCSMP program.

Contact: Zalman Usiskin or Carol Siegel
UCSMP
University of Chicago
5835 South Kimbark Avenue
Chicago, IL 60637
(312) 702-1560 or (312) 702-9770

The New Jersey Algebra Project

Purpose: To provide a logically-sequenced algebra curriculum for middle school and high school that is designed to develop students' capabilities to do quantitative reasoning.

Description: Developed by Dr. Charles Pine of Rutgers University, the program emphasizes discussion and student discovery, rather than drills and rote memorization. A major element in the Algebra Project approach is homework that is sequenced so that problems build quickly in complexity. In its seventh year of implementation in New Jersey, 217 teachers taught the Algebra Project to approximately 8,400 students in 422 classes in public and nonpublic schools in 1990-91. Training is ongoing throughout the year and is conducted by experienced project teachers.

Why It Is Promising: The Algebra Project has received national recognition for its comprehensive use of assessment to improve instruction. Systematic testing and evaluation of all project classes is used to assess the effect of changes in curriculum, materials, and teaching approach as well as to investigate student and classroom factors entering the learning process.

Costs: The cost to the districts is $10 per book, which includes all testing materials. Operating costs of the program are covered by grants and resources provided through the New Jersey Department of Higher Education, New Jersey Department of Education, and Rutgers University.

Evaluation: An extensive outside evaluation concluded that the Algebra Project is highly successful in improving both teacher and student attitude and performance.

Where to See It: The Algebra Project operates in 72 school districts throughout New Jersey (including nine nonpublic schools).

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Newark, NJ 07102
(201) 648-1041

Applied Mathematics

Purpose: To provide a math program specifically designed for the middle half of the school population in grades 8-12--especially for those who are not college-bound.

Description: The program was developed by the Center for Occupational Research and Development (CORD) with funding from 45 state vocational education agencies. The materials contain 36 units and cover two years of integrated mathematics. Completion of the program prepares students for entry into Algebra 2.

Applied Mathematics was developed in cooperation with leaders from the mathematics community, vocational community, and the business sector. The curriculum emphasizes the practical applications of mathematics concepts and problem-solving skills. Taken as a whole, the 36 units cover the mathematics concepts required to function in the workplace--including arithmetical computations, estimation, algebra, geometry, trigonometry, statistical process control, and computer problem solving. Scientific calculators and graphing calculators are used throughout the program.

Each unit is an integrated learning package made up of a video program that emphasizes the relevance of the math concepts in a variety of workplaces, text, three laboratory activities, 40 practical problem-solving exercises, and a glossary. Each unit has six activity sessions (not necessarily corresponding to six class periods). In session 1 students view the video and work as a group on problems motivated by the video. In sessions 2 and 3 students read and learn the concepts by discussing the text and doing classroom activities. In sessions 4 and 5 students do problem-solving exercises and work in hands-on laboratories (using vernier calipers, micrometer calipers, plumb lines, metal tapes, line levels, stopwatches, carpenter squares, pan balances, etc.) to make measurements, process the data, and solve the problems. Session 6 includes review and evaluation. Students' texts are accompanied by a comprehensive teacher's manual that provides guidance and support for the teacher's presentation of the materials--to help transform the teacher from a chalkboard "presenter" to a catalyst for learning mathematics.

Why It Is Promising: Applied Mathematics was developed to meet 1990 standards established by the National Council of Teachers of Mathematics. The program is currently offered more than 1,500 sites including some 35,000 students in the 45 consortium states.

Evaluation: Texas A&M University and various consortium member states have conducted evaluations of Applied Mathematics. Positive learning gains and improved student attitudes were noted in all reporting sites.

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Center for Occupational Research and Development
601-C Lake Air Drive
Waco, TX 76710
(817) 772-8756 or 1-800-231-3015

Industry Initiatives for Science and Mathematics Education (IISME)

Purpose: To provide research experiences to teachers in industrial settings that will enhance their knowledge and classroom activities.

Description: This program, sponsored by the Lawrence Hall of Science at the University of California, Berkeley, and Bay Area industries, is a summer fellowship program for math, science, and computer science teachers in grades 6-12. The program began seven years ago when some engineers from Lockheed expressed their concern about the state of math and science education to the director of the Lawrence Hall of Science.

Teachers spend eight weeks working in industry, doing real-world science and becoming familiar with recent scientific and technological developments. Each teacher is paired with an industry mentor who works closely with the teacher. The program works with the mentors and teachers during the summer and the academic year to help them translate the teachers' experiences to the classroom.

Why It Is Promising: This program provides a means for teachers to enhance their knowledge and skills that could be adopted in almost any location.

Costs: Participating companies fund the program's administration and pay the teachers the equivalent of their teaching salary. Grants and in-kind donations from companies and foundations enable the program to pilot new ideas. One recent grant came from the National Science Foundation (NSF).

Evaluation: A soon-to-be released evaluation of the program's past six years notes that more than 90 percent of participating teachers cite IISME as the best professional development experience they have had, and 40 percent say their participation in the program played a role in their decision to remain in teaching.

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The Academy for Mathematics and Science Teachers

Purpose: To provide in-service and networking services for Chicago and to serve as a model for what other large school districts might do to improve mathematics and science education.

Description: The academy, established by Leon Lederman, Nobel laureate in physics and former director of the Fermi National Laboratory, is an effort to reeducate all of the approximately 17,000 math and science teachers in Chicago's public schools. The academy trains teachers to focus on experimentation, hands-on work, and problem solving.

The academy began operating in the fall of 1990, using Illinois Institute of Technology facilities. During this pilot year the academy will graduate 109 teachers from nine elementary schools from its spring and summer pilot. (The plan is to include K-12 teachers, but laboratories for secondary-level science are not ready.)

The key to the plan is providing academy-trained replacement teachers to substitute for participants and to team-teach with them. In the intensive training program, public school teachers receive two days of academy classes plus one day of team teaching every two weeks for 16 weeks. A specialist will then be available at each school to provide a semester for follow-up support. This summer the academy will begin a second option that provides two four-day weeks of academy training, with nine single days during the fall. About 1,460 teachers will participate next year.

This summer the academy will also begin an outreach program of workshops, some conducted with the Lawrence Hall of Science, the Adler Planetarium, and the Lincoln Park Zoo, that are open to all interested teachers, including private school teachers.

Why It Is Promising: The Chicago Academy can serve as a prototype for the governor's academies, by providing intensive staff development to encourage reform.

Costs: The academy received seed money from foundations ($34,000), planning grants from the Department of Energy ($215,000) and NSF ($200,000), and a $2 million one-year operating grant from the Department of Energy. Illinois provided $55,000 in U.S. Department of Education Eisenhower funds and a $750,000 state science literacy grant. The major cost of the program is the replacement teachers, because one teacher can work with only three participants at a time.

Evaluation: The academy has just begun to operate, so there has been no opportunity for outcome evaluation. Because the intent of the program is to create schoolwide change, the academy conducts an assessment of each school's needs in math and science, and requires that at least 60 percent of the school's teachers and 70 percent of the local school council sign a document saying that they are willing to work with the academy and implement the program. The academy is working with the principals of the nine participating schools to develop ways to encourage whole-school change.

Contact: Dr. Jon Thompson
Project Director, Teachers Academy of Mathematics and Science
10 West 35th Street
Chicago, IL 60616
(312) 808-0100

Improving the K-8 Mathematics Curriculum to Benefit Students with Disabilities

Purpose: To assess the appropriateness of general education (K-8) curricula in mathematics for students with disabilities.

Description: A cross-grade (e.g., primary, elementary, and middle grades) approach is being employed to determine the compatibility of the scope, sequence, and presentation of mathematics curricula with the learning characteristics and needs of students with disabilities in mainstream classrooms. The project is analyzing traditional and alternative curricular approaches and textbooks materials to develop and field-test guidelines for use by publishers and developers, administrators, teachers, and curriculum evaluation committees at the district or state level.

Why It Is Promising: The curricular analyses being conducted and guidelines developed by the project will provide a means for determining the appropriateness of general education mathematics curriculum for students with disabilities. The analyses and guidelines should help supervisors, teachers, and diagnostic personnel determine the adaptation, modification, or alternative curriculum accommodations required for students with disabilities.

Contact: Dr. Douglas Carnine
Dr. Edward J. Kameenui
Project Directors
University of Oregon
1751 Alder Street
Eugene, OR 97403

National Council of Teachers of Mathematics (NCTM) Standards

Purpose: To create a coherent vision of what it means to be mathematically literate and to create a set of standards to guide the revision of the school mathematics curriculum and its associated evaluation and teaching toward this vision.

Description: Based on syntheses and curricula begun in the late 1970s, the Instructional Issues Committee of the National Council of Teachers of Mathematics (NCTM) in 1986 established a national commission to develop a set of curriculum and evaluation standards for mathematics. During the process of developing the standards, drafts were made publicly available and a wide range of reactions were collected from NCTM state chapters and affiliated groups, teachers and educators, open forums at NCTM regional meetings, Mathematics Sciences Education Board (MSEB) hearings for parents, business representatives, and government officials, and over 2,300 written comments received in response to an open invitation for comments. After incorporating public and professional input, the Curriculum and Evaluation Standards for School Mathematics were published in April 1989. A separate committee used a similar process to develop the Professional Standards for Teaching Mathematics (March 1991).

Since the publication of the Standards, NCTM has initiated a variety of activities to aid implementation. The K-3 Math Specialists Program, supported by the Exxon Foundation, has conducted three national conferences and is preparing a book describing local projects. The Number Sense, Number Concepts, and Computation project funded by the U.S. Department of Education is developing videotapes and print materials. In the Research Interpretation project, which receives support from the National Science Foundation, teams of researchers and teachers are analyzing, synthesizing, and interpreting the results of research in mathematics education. The Student Assessments in Mathematics project, underwritten by the MacArthur Foundation, is developing a teacher resource book of successful models and prototypes for assessing student understanding, progress, and achievement in mathematics.

Why It Is Promising: The NCTM standards are the model for standards development that other disciplines are likely to follow in the creation of new world standards. There has been remarkable agreement among mathematicians on this topic.

Evaluation: Although it is too early to conduct an outcome evaluation of the NCTM standards, they are clearly having substantial impact on state frameworks, textbooks, and assessments.

Contact: National Council of Teachers of Mathematics
906 Association Drive
Reston, VA 22091
(703) 620-9840

Sources of Further Information

Center for the Learning and Teaching
of Elementary Subjects (CLTES)
College of Education
Michigan State University
East Lansing, MI 48824
(517) 353-6470

Contacts: Jere Brophy and Penelope L. Peters, Co-Directors

This center is conducting in-depth research and development studies in elementary-level subject areas including mathematics education, with particular emphasis on improving students' understanding and use of knowledge.

Committee on the Mathematical Education of Teachers (COMET)
Mathematical Association of America (MAA)
1529 18th Street NW
Washington, DC 20036
(202) 387-5200

COMET was established in 1983 as an outgrowth of a previous MAA panel. In its concern with the preparation of both elementary and secondary school teachers, COMET has endorsed the NCTM standards and has called for corresponding changes in mathematics preparation for teachers.

Education Development Center (EDC)
55 Chapel Street
Newton, MA 02160
(617) 969-7100

Contact: Patricia Sacco

EDC is an international research and development organization dedicated to improving the quality and effectiveness of education throughout the world. In addition to research projects, EDC is assisting a number of school districts to assess the mathematics programs in their districts and to implement the NCTM standards. EDC provides support to the Urban Mathematics Collaboratives, a cooperative network based in 14 cities that seeks to strengthen mathematics education and to promote teachers' professional development in urban schools across the country. It has undertaken several initiatives in support of the Teacher Networks Group, a federation of funders and operators of teacher development projects. EDC is collecting exemplary math materials for inclusion on a CD-ROM that will be available to teachers, supervisors, staff developers, and university faculty. EDC has also developed a variety of educational software packages for mathematics.

Education Resources Information Center (ERIC)
Clearinghouse on Science, Mathematics,

and Environmental Education (ERIC/SMEAC)
1220 Chambers Road, Room 311
Columbus, OH 43212-1792
(614) 292-6717

Contact: Dr. David Hawry, Director

Education Resources Information Center is a nationwide information network that acquires, catalogues, and provides access to education literature. The ERIC data base contains more over 650,000 documents and articles on education-related topics, and information is available in some 3,000 locations. The ERIC system consists of 16 clearinghouses, a central processing reference facility, and ACCESS ERIC, a one-stop contact point for new users of the system. Although all clearinghouses address mathematics and science when relevant to their specific mission, the clearinghouse located at Ohio State University focuses on mathematics, science, and environmental education. This clearinghouse generates syntheses and summaries on mathematics and science topics, as well as compilations of promising programs and practices.

Federal Coordinating Council on Science, Engineering and Technology (FCCSET) and its Committee on Education and Human Resources (CEHR)
Office of Science and Technology Policy
Washington, DC 20506

FCCSET is a governmentwide policy coordinating body for science, engineering, and technology. The ongoing purpose of CEHR is to guide federal education and human resource development activities in three broad areas: (l) ensuring an adequate, well-trained, scientific and technical work force; (2) maintaining U.S. leadership in world science and technology; and (3) producing a generation of well-informed and scientifically literate American students.

CEHR compiled a directory of programs across federal agencies that support mathematics and science education. This report, By the Year 2000: First in the World, includes a discussion of CEHR's priorities for mathematics and science education programming. CEHR is now preparing a five-year plan for federal efforts in math and science education that will include milestones and proposed outcome measures.

Mathematical Sciences Education Board (MSEB)
818 Connecticut Avenue NW, Suite 500
Washington, DC 20006

Contact: Dr. Raymond Shiflett

MSEB was established in 1985 to provide a continuing national overview and assessment capability for mathematics education; the board is concerned with excellence in mathematical sciences education for all students at all levels. The board reports directly to the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Science, the National Academy of Engineering, and the Institute of Medicine. In accord with the NCTM Standards, MSEB has set as a goal the reform of mathematics education in this country.

National Center for Research in Mathematical Sciences Education (NCRMSE)
Wisconsin Center for Education Research
University of Wisconsin--Madison
1025 West Johnson Street
Madison, WI 53706
(608) 263-4285

Contact: Dr. Thomas A. Romberg, Director

The mission of the NCRMSE is to provide leadership and a research base for the reform movement in school mathematics, specifically in relation to National Education Goal number 4. Current research focuses on learning and teaching in the three specific content domains of whole numbers, of quantities, and of algebra and quantitative analysis, along with work in the two cross-cutting areas of authentic assessment and implementation of reform. Working groups in two additional content areas (geometry and statistics and probability) are now being formed for subsequent activation. In addition, NCRMSE has helped several states (notably California) and other groups revise their mathematics curricula in accord with the NCTM standards.

National Council of Teachers of Mathematics (NCTM)
906 Association Drive
Reston, VA 22091
(703) 620-9840

Contact: Dr. James Gates

Since 1920, NCTM has been dedicated to the improvement of school mathematics instruction at all levels. Through its many publications, conferences, and other services, this professional organization of nearly 74,000 members and 220 affiliated groups in the United States and Canada form a network of information and resources for topics in mathematics education.

National Research Center on Student Learning
Learning Research and Development Center
University of Pittsburgh
3939 O'Hara Street
Pittsburgh, PA 15260
(412) 624-7450

Contact: James Voss, Associate Director

NRCSL explores the nature of potentially teachable thinking and reasoning skills; examines how content in various subjects is learned and taught; investigates the nature of exemplary teaching practices; seeks to create new knowledge useful in teaching students how to become competent thinkers, learners, and problem solvers; and conducts research on understanding and fostering the skills that underlie successful thinking in mathematics, science, and social studies.

One ongoing activity is Project Quasar, a project funded by the Ford Foundation to demonstrate the capability of economically disadvantaged middle school students in learning advanced mathematical

content and sophisticated mathematical reasoning skills. Another activity deals with developing mathematics classrooms as apprenticeship environments for learning, targeted particularly at disadvantaged elementary school children (see Resnick et al. in Means and Knapp 1991). Another research activity deals with how expert elementary school teachers explain mathematics to their students (Leinhardt 1989).

National Science Resources Center
Arts and Industries Building, Room 1201
Smithsonian Institution
Washington, DC 20560
(202) 357-2555

Contact: Douglas Lapp, Executive Director

The National Science Resource Center, an organization of the Smithsonian Institution and the National Academy of Sciences, was established to improve the teaching of science and mathematics in the nation's schools. The center maintains a collection and data base of teaching resources, develops and disseminates curriculum materials for teachers, and sponsors outreach activities to help school districts improve their science programs.

Research Programs at the National Science Foundation
Research in Teaching and Learning
Directorate for Education and Human Resources
National Science Foundation
1800 G Street NW
Washington, DC 20550
(202) 357-7071

Contact: Dr. Ray Hannapel

The National Science Foundation supports research in mathematics and science through its Research in Teaching and Learning Program in the Division of Materials Development, Research, and Informal Science Education. One study of mathematics education is investigating the development of students' algebraic reasoning in grades 5-7 as they are taught for three years from a curriculum infused with instruction that emphasizes quantitative reasoning. Another study is examining changes over time in students' thought processes and performance as a result of conceptually based instruction and relationships between conceptual acquisitions and successful performance. A third project is examining how measuring and modeling activities with real science situations affect students' understanding of science experiments and the underlying calculus concepts of rate of change and integration. A fourth project is conducting three interrelated studies on understanding and teaching the mathematical concepts of functions and their graphs in the Cartesian plane; these studies are apparatus-based learning, innovative curricula, and a comparison of human and computer-based tutoring strategies.

The publication Research in Teaching and Learning, Fiscal Years 1987-1990, containing abstracts of all the projects supported during those periods, will be available shortly from the NSF.

Chapter 5

Science

Current Thinking

Context

Science is a particular way of looking at the world, of envisioning it as understandable and predictable. Science is about investigating the world's mysteries through disciplined, objective inquiry as part of a community of other curious men and women. It is also about finding ways to apply what is learned through that inquiry in order to improve human life. We are increasingly dependent on science to promote our economic well-being as well as to find solutions to our most pressing problems--everything from AIDS to environmental degradation. Unfortunately, American education usually approaches science as if it were just a collection of isolated information, facts, terms, and procedures to be memorized and repeated, with no relevance to everyday life.

Problems with curriculum and instruction are reflected in the performance of U.S. students on national and international achievement tests. The National Assessment of Educational Progress (NAEP) has reported the following findings:

- The performance of American 17-year-olds in science is "well below" that of their predecessors nearly 20 years ago (Mullis et al. 1988).

- More than half of our 17-year-olds are inadequately prepared in science "for informed participation in the nation's civic affairs" (Mullis et al. 1988).

International achievement comparisons have been no more encouraging. In a study of science achievement by the International Association for the Evaluation of Educational Achievement (1988), U.S. students ranked at or near the bottom of the countries included in the study in all science subjects tested. In the International Assessment of Educational Progress study (Lapointe, Mead, and Phillips, 1988), U.S. students ranked near the bottom in comparison to the four foreign countries and five Canadian provinces included.

Reforming Science Education

The recent awareness of the need to reform science education has its precursor in the Sputnik-inspired panic of the late 1950s which launched the previous wave of reform. Major science curriculum projects, most of which were supported by the National Science Foundation (NSF), brought current scientific information to the school curriculum. Their emphasis was on scientific accuracy and hands-on science. Another significant innovation, also supported by NSF, were the teacher institutes. These summer or academic-year programs were conducted by university scientists for teachers to provide them an opportunity to upgrade their knowledge of science; some were directly tied to individual curriculum innovations. Today, several major reform efforts are under way in science.

Starting Science Early

The overriding problem in elementary and middle school science education is time. Science is rarely taught in elementary schools, and when it is, it gets short shrift. In grades K-3, only 18 minutes per day, on average, are spent on science; in grades 4-6 the average is 29 minutes. Even in the middle grades, half of the teachers report spending only three hours or less per week on science (Weiss 1987).

Beginning in the middle grades, science is usually taught by dividing it into separate disciplinary areas, such as earth science, biology, and physics, with only one discipline being taught each year. This places teachers and textbook preparers in the thankless position of trying to cram the entirety of scientific knowledge about, chemistry, for instance, into nine short months or between the covers of one book--an impossibility given the recent explosion in scientific knowledge and the rapidly evolving nature of scientific inquiry. Students are invariably shortchanged by a system that stresses only the differences between scientific disciplines without giving students a chance to understand their similarities, and requires students to assimilate the entire breadth of a discipline, from basic ideas to complex concepts, in a single academic year rather than spacing the subject out over several years.

Concentrating on Major Concepts

Reformers are calling for textbooks and curricula that present the major concepts of science coherently, rather than getting bogged down in the minutiae of terminology and peripheral details. One effort to develop a broad vision of what science education should address was begun in 1985 by the American Association for the Advancement of Science (AAAS 1989). Called Project 2061, for the next year that Halley's comet will be in the vicinity of Earth, it is an attempt to identify the fundamental concepts of science and mathematics that all American students should know. It is purposely long range and cross-disciplinary, to counteract the prevailing practice of trying to cover as many topics as possible at the expense of substantial, in-depth learning.

The first phase of the project was the identification by scientists of the fundamental principles to be learned. Results of the first phase were published in Science for All Americans. The second phase is the development of curriculum models by schools, with guidance from science educators. The third phase will involve wide-scale implementation in the schools and identification of other concerns, such as teacher education, that must be addressed if Project 2061 is to succeed.

Another reform effort has been the science/technology/society (S/T/S) movement. This is an attempt to integrate science with current technology initiatives and with social issues, thus creating an interdisciplinary means of teaching science (Roy 1987). Emphasis is placed on making science instruction meaningful for all students.

Providing an Integrated Curriculum

The invariable progression of biology, then chemistry, then physics in American secondary schools (dubbed the "layer-cake curriculum") effectively ensures that--since most students take only the one or two years of high school science required for graduation--many students never study chemistry and only a few ever study physics. Even with recent, tougher requirements, only 20 percent of all high school graduates take physics, compared with 90 percent who take biology and 45 percent who take chemistry.

The Scope, Sequence, and Coordination Project of the National Science Teachers Association (NSTA) (Aldridge 1989) presents an alternative to the "layer-cake curriculum." This project calls for science to be taught to all students every year in grades 7-12 and for each of the four science disciplines--biology, chemistry, earth science, and physics--to be taught each year in a carefully sequenced, well-coordinated manner. Because all students will study science every year beginning in middle school, students will not be able to drop out of or be tracked out of science.

This approach would allow the curriculum to build on previous learning and to spread the study of a subject over several years, rather than trying to cram it into a single year. It would also allow teachers to point out cross-disciplinary themes. Coordination of topical areas and processes that are common to biology, chemistry, earth and space science, and physics emphasizes the interdependence of scientific disciplines as part of a larger body of knowledge. The project proposes that learning be developed through direct hands-on experiences first, and that terminology, symbols, and equations be added later. The major focus is on teaching fewer topics to cultivate greater depth of understanding.

The Scope, Sequence, and Coordination Project is currently being developed and tested at various sites, including sites in California and Texas. At the Houston site, lessons are built around "blocks," a sequenced collection of laboratory activities focusing on coordinated concepts (such as "floating and sinking") from biology, chemistry, earth/space science, and physics. The format of these blocks has been used as a model for all materials developed within the NSTA Scope, Sequence, and Coordination Project. There is also discussion of extending the project to the elementary grades.

Emphasizing Hands-on Approaches and Laboratory Work

The nature of instruction has been a matter of concern at all educational levels. There is little laboratory instruction or other hands-on activity, and the availability of science laboratories has decreased since 1986. Instruction is dominated by the classroom lecture and textbook, and those textbooks focus too much on terms and definitions to be memorized at the expense of broader concepts or the all-important goal of learning to think and reason scientifically. Science education should teach a student to approach the world as a scientist, not to become a whiz at science trivia.

Part of the problem with the dismal state of science instruction is inadequate teacher preparation in science and the number of teachers who are teaching outside of their primary area of expertise. A recent study by the Council of Chief State School Officers (Blank and Dalkilic 1991) found that fully one-third of public high school teachers whose primary assignment is science did not major in science themselves. Inadequate preparation is an even greater concern at the elementary and middle school levels. Only 44 percent of elementary teachers and 22 percent of middle school teachers have taken the courses called for by the NSTA. Teachers who lack a strong background in science will be more likely to rely on textbooks and less likely to be confident in exploring new instructional approaches, such as developing their own hands-on lessons. Increased efforts are needed to provide teacher in-service experiences that improve not only participants' grasp of science concepts but also their confidence in conducting their own scientific explorations with students.

Reenvisioning the Learning Process

Reform of science instruction however, involves more than just greater emphasis on hands-on activities. Educators now recognize that students are not empty vessels or clean slates who arrive in the classroom ready to passively accept whatever information the teacher provides. Even very young children have already developed ideas about how the world works, based on their everyday experiences and observations. Any information they are presented with in science class will be

judged against what they already know, and incorporated into their existing understanding in ways that make sense to them. Unfortunately, some of the ideas students have developed for themselves may conflict with the findings of science. (To take a simple example: it is "obvious" that the sun revolves around the earth, because we can see it rise in the morning, move across the sky, and set at night.) Merely telling students about these findings will usually not change their ideas, even though they may parrot the information correctly on tests.

Instead, science instruction must take advantage of the fact that children are active learners who construct knowledge for themselves. Science lessons must encourage students to explore the world and to make sense out of what they discover. Lessons must have carefully planned sequences of observations and experiments to be conducted over a long enough period of time so that students can gradually incorporate what they find out, testing their preconceived ideas and developing new ways of understanding the world.

Again, reforming science education presents a challenge to teachers. Some will find it uncomfortable to give up the role of authoritative conveyer of knowledge in favor of a new role as facilitator of active learning. The old instruction method approaches scientific knowledge as if it were a quantity of stuff to be conveyed, unchanged, from the textbook or lecture into students' brains. The new method sees scientific knowledge as the outcome of an active, creative process that teachers and students conduct together as they explore the world--which is much closer to the collegial, experiment-based enterprise in which scientists actually engage.

Improving Assessment Methods

States have been leaders in science curriculum/teaching reform through the development of new forms of science assessment. This is vital for science education reform because the attempt to encourage more hands-on lessons and lab work will succeed only if that emphasis is reflected in the assessment methods by which students and teachers are judged. Lab work can be time-consuming, and teachers are less likely to devote precious class time to activities that they think will not be validated at test time. California has been a leader in developing new assessment methods with its California Assessment Program (CAP). The new science portion of CAP will include hands-on performance tasks; it will require students to demonstrate their knowledge of the concepts and processes of science and their ability to solve problems. New York and other states have also moved to performance assessments in their state assessment batteries.

Ensuring Equity

Women of all races and backgrounds, minority men (particularly blacks, Hispanics, and Native Americans, and students with disabilities face many obstacles to success in the sciences. Some of these obstacles are the messages generated by families, classmates, teachers, and society at large that science is a restricted field. White females and male and female minority students who are subtly or overtly told that science is unfeminine, "too hard" for all but a few "geniuses" (or weirdos), and closed to nonwhites, will be less likely to pursue advanced coursework. Parents' and teachers' expectations that minority and majority females and minority males will not perform well in science courses, particularly in chemistry and physics, can become self-fulfilling prophecies. And the concentration of minority students in lower track and remedial courses and in deteriorating urban schools contributes to patterns of poor performance, particularly when low expectations are combined with uninspiring curricula and ineffective instructional methods.

In addition to improving the overall quality of science instruction, efforts to ensure equity must include the use of innovative strategies that focus on the needs of students from a variety of backgrounds. Mentor programs, parental involvement programs, enrichment programs, curricular reform that ensures that due attention is paid to the contributions to science made by women of all backgrounds, minority men, and persons with disabilities--as well as direct encouragement from teachers and parents--all are examples of initiatives that can help all students succeed in science.

Moreover, students with disabilities, whatever their sex or background, face additional obstacles. Not only can they be hampered by others' low expectations for their success, but also they must deal with physical obstacles, particularly for laboratory work. A lab bench that is a comfortable height for someone to work at standing up is out of reach for a wheelchair user. Someone with a mobility, sight, or hearing impairment may need assistance to conduct or record certain types of observations and experiments. Making science accessible to all requires effort and creativity on the part of teachers and administrators.

Future Directions

Because science is not a single discipline but rather a set of separate disciplines, changing curricula and reforming instruction in science has been difficult. There is currently an effort under way, funded by the U.S. Department of Education, to develop, through a consensus process, a set of standards for what science should be taught in the schools today. This effort will use as a model the process through which the National Council of Teachers of Mathematics developed standards for mathematics education. The National Academy of Sciences and NSTA have taken prominent roles in this effort. In the summer of 1992, the Academy gathered representatives from every science education organization, along with teachers and scholars, to work on the consensus process. The project is expected to be completed in 1994.

Suggested Reading List

Aldridge, Bill G. 1989. Essential Changes in Secondary School Science: Scope, Sequence, and Coordination. Washington, DC: National Science Teachers Association. Describes a major national reform of science education: the Project on Scope, Sequence, and Coordination of Secondary School Science, which was initiated by the author and became a project of the National Science Teachers Association.

American Association for the Advancement of Science. 1989. Science for All Americans. Washington, DC: AAAS. Provides recommendations on what understandings and ways of thinking are essential for all citizens in a world shaped by science and technology.

_____. 1990. Sourcebook for Science, Mathematics & Technology Education, 1990-91. Washington, DC: AAAs. Provides a directory with names and addresses of people, programs, and organizations involved in current U.S. efforts to increase the quality of science and math education.

Anderson, C. W., and E.L. Smith. 1987. "Teaching Science," In V. Richardson-Koehler, ed, Educator's Handbook: A Research Perspective. New York and London: Longman. Provides research-based knowledge about effective schooling and classroom practices for teachers, teacher educators, staff developers, school administrators, local policymakers, and others whose decisions and actions require research information about teaching practices.

Blank, R., and M. Dalkilic. 1991. State Indicators of Science and Mathematics Education: 1990. Washington, DC: Council of Chief State School Officers. Analyzes state-by-state data on elementary and secondary school indicators from 1988-89, gathered by the State Education Assessment Center of the Council of Chief State School Officers. Indicators include course enrollment in science and mathematics and teacher characteristics.

Champagne, A.B., B. Lovitts, and B.J. Calinger. eds. 1989. This Year in School Science 1989: Scientific Literacy. Washington, DC: American Association for the Advancement of Science. Discusses the dispute over the definition of scientific literacy and seeks to stimulate debate over a better mutual understanding thereof.

Champagne, Audrey and L.E. Hornig. eds. 1987. This Year in School Science: Students and Science Learning: Papers from the National Forum for School Science. Washington, DC: American Association for the Advancement of Science. Contains papers presented at the National Forum for School Science.

Druger, M., ed. 1988. Science for the Fun of It: A Guide to Informal Science Education. Washington, DC: National Science Teachers Association. Focuses on science learning outside the classroom. The 19 articles in this volume are organized into four major sections: (1) strategies; (2) the media; (3) museums and zoos; and (4) projects, competitions, and family activities.

Educational Technology Center. 1988. Making Sense of the Future: A Position Paper on the Role of Technology in Science, Mathematics, and Computing Education. Cambridge, MA: Harvard Graduate School of Education, Harvard University. Summarizes the results of the Education Technology Center's work studying the uses of computers and other technologies to improve K-12 instruction in science, mathematics, and computing.

Harms, N.C. and R.E. Yager, eds. 1981. Project Synthesis: What Research Says to the Science Teacher Vol. 3. Washington, DC: National Science Teachers Association. Summarizes three NSF status studies and related NAEP reports. Volume 3 contains chapters on the project itself, biology, physical science education, inquiry learning, elementary science, and science/technology/society issues in the classroom.

Helgeson, Stanley, et al. 1990. Promising and Exemplary Programs and Materials in Elementary and Secondary Schools. ERIC Clearinghouse for Science, Mathematics, and Environmental Education. Columbus: Ohio State University. Lists 36 programs or curriculum materials for which information on outcomes or quality is available.

International Association for the Evaluation of Educational Achievement. 1988. Science Achievement in 17 Countries: A Preliminary Report. Oxford, England: Pergamon Press. Presents findings from the International Association for the Evaluation of Educational Achievement's 1983-86 study of science achievement in 24 countries at three levels in each school system.

Lapointe, A.E., N.A., Mead, and G.W. Phillips. 1989. A World of Differences: An International Assessment of Mathematics and Science. Princeton, NJ: Educational Testing Service. Summarizes the results of an assessment of mathematics and science achievement and a questionnaire given to students from five countries and four Canadian provinces and compares achievement, experiences, and attitudes across the international sample.

Loucks-Horsley, S. et. al. 1990. Elementary Science for the 90's, Andover, MA: National Center for Improving Science Education. Addresses questions about the science learning needs of children. Directed primarily toward decision makers at the school, district, and state level decision-makers.

Majumdar, S.K. et al., eds. 1991. Science Education in the United States: Issues, Crises, and Priorities. Easton, PA: Pennsylvania Academy of Science. Contains articles exploring current issues in national science education.

Mullis, Ina V.S., et al. 1988. The Science Report Card: Elements of Risk and Recovery. Princeton, NJ: Educational Testing Service. Presents the results of 1986 science assessment by the National Assessment of Educational Progress.

National Center for Improving Science Education (NCISE). 1991. The High Stakes of High School Science. Washington, DC: NCES. Presents a blueprint for action addressing four aspects of science education: (1) program, (2) assessment, (3) teaching, and (4) teacher and organizational development.

National Research Council. 1990. Fulfilling the Promise: Biology Education in the Nation's Schools. Washington, DC: National Academy Press. Offers a vision of what biology education in the schools could be, along with practical recommendations on how to make the vision a reality.

National Science Board. 1989. Science & Engineering Indicators 1989. Washington, DC: U.S. Government Printing Office (NSB 89-1). Ninth volume in the biennial "Science Indicators" series initiated by the National Science Board. The series provides a broad base of quantitative information about the structure and function of U.S. science and technology and comparisons with other advanced industrial countries.

National Science Resources Center. 1988. Science for Children: Resources for Teachers. Washington, DC: National Academy Press. Lists curriculum materials, supplementary resources, and sources of information and assistance.

Nelson, B. H., I.R. Weiss, and J. Capper. 1989, 1990. Science and Mathematics Education Briefing Book, Vols. 1 and 2. Chapel Hill, NC: Horizon Research, Inc. Provides data on teachers, curricula, instruction, student attitudes and experiences, national and international science proficiency, and demographics. Includes tables, charts, graphs, and narrative descriptions.

Paulu, Nancy, and Margery Martin. 1991. Helping Your Child Learn Science, USGPO # 298-805/40694. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, June. Provides a variety of ideas and activities for parents on how to use everyday objects to pique children's curiosity about science.

Raizen, S. 1991. "The State of Science Education." In S.K. Majumdar et al., eds. Science Education in the United States: Issues, Crises, and Priorities. Easton, PA: Pennsylvania Academy of Science.
Discusses the evidence that the current state of science education is unsatisfactory to meet individual and societal needs. Examines the issues at the elementary, middle school, and high school levels, analyzes the basis for reform, and sets forth an agenda for reform.

Resnick, L. 1987. Education and Learning to Think. Washington, DC: National Academy Press. 1987. Reviews recent research from psychology and education on how children acquire complex thinking skills and learn to reason, and how the schools can teach such skills more effectively.

Roy, R. 1987. "The Nature and Nurture of Technological Health." In Ceramics and Civilization: Vol. III. High Technology Ceramics: Past Present and Future. Westerville, OH: American Ceramic Society. Discusses how to deploy national resources to maintain a healthy technology, and asserts that an erroneous theory underlies U.S. technology and science policy: the assumption that science automatically leads to technology.

Tyson-Bernstein, H. 1988. "A Conspiracy of Good Intentions: The Textbook Fiasco." American Educator 12 (Summer): 20, 23-27, 39. Asserts that publishers are compelled by public policies and practices to produce textbooks that confuse students with non sequiturs, mislead them with misinformation, and bore them with pointlessly arid writing.

U.S. Department of Education. 1987. James Madison Elementary School. Washington, DC: U.S. Department of Education. Describes the body of knowledge, the common language of ideas, and the intellectual rigor required of a comprehensive elementary school curriculum, including science.

Vygotsky, L. 1978. Mind in Society: Development of Higher Psychological Processes. Cambridge, MA: Harvard University Press. Presents Vygotsky's most important essays with commentary by Vygotsky scholars that clearly describes the great Russian psychologist's frequently misunderstood theory of development.

Walberg, H. 1991. "Improving School Science in Advanced and Developing Countries." Review of Educational Research 61 (Spring): 25-61. Reviews research on science education,

particularly for primary and secondary schools in low- and middle-income areas and suggests effective ways of promoting science education.

Weiss, I.R. 1988. "Course Background Preparation of Science Teachers in the U.S.: Some Policy Implications." In A.B. Champagne, ed., This Year in School Science: Science Teaching: Making the System Work. Washington, DC: American Association for the Advancement of Science, 1988. Describes the course background preparation of science teachers; presents the results of additional analyses comparing science teacher preparation with the preservice preparation standards recommended by the National Science Teachers Association; and discusses some of the policy implications of these data.

_____. 1987. Report of the 1985-86 National Survey of Science and Mathematics Education. Research Triangle Park, NC: Research Triangle Institute. Presents findings of the 1985-86 survey of teachers and principals. Focuses on teacher preparation and training but also includes data on teachers' activities, college course taking, instructional materials and practices, classroom activities, hands-on materials, and calculators and computers.

Yager, R.E. and J.E. Penick. 1990. "Science Teacher Education." In W.R. Houston, ed., Handbook of Research on Teacher Education. New York: Macmillan. Examines the history of science teacher education to gain a new perspective on current issues in education.

Examples of Promising Projects

The Life Lab Science Program

Purpose: To encourage lasting interest and success in science by providing active, participatory learning experiences for elementary students in a "living laboratory"--the garden. The Comprehensive Life Lab Science Program expands the curriculum to integrate life, earth, and physical sciences in a systems approach to science. The garden serves as a physical example of a system--an ecosystem.

Description: The Life Lab Science program offers an explicit plan for getting students involved in a substantial number of hands-on experiences. The materials for hands-on activities are familiar to most teachers and, in terms of their quantities and cost, are both affordable and manageable. The critical learner setting is the "living laboratory," whether an indoor grow box, containers adjacent to the classroom, a greenhouse, or a three-acre school farm.

The Life Lab Science Program integrates conceptual learning and practical applications to demonstrate to students how science relates to everyday life. They learn, for example, how their bodies, like plants, need nutrients that are available from various sources. This learning is gained through chemical experiments with, and data analysis of, nutrients in soil. A variety of learning activities are derived from this work, including some that relate to ecology, ethical issues, and decision making.

The primary Curriculum guide is The Growing Classroom, which contains science, nutrition, and gardening units. Curriculum components include teacher curriculum guides, student lab books, garden log, and garden resource book. Each unit begins with an assessment of students' understanding and skills. Students then build on their own knowledge through guided exploration and practice. Units end with activities that allow students to synthesize, apply, and reflect on their new knowledge. Assessment activities are embedded in each unit.

Why It Is Promising: By creating a laboratory in which students can directly participate, the program brings science to life and allows the student to be a part of it. The garden as a living laboratory for exploring science concepts captures the interest of both students and teachers.

Evaluation: The Life Lab Science Program has had more than 10 years of successful piloting throughout the country, particularly in California. After six months of participating in Life Lab, students in grades 2-5 improved their knowledge of science concepts as measured by significant pre/posttest gains for Life Lab students and statistically significant gains relative to comparable control groups as measured by the California Test of Basic Skills (CTBS) Science Subtest. In surveys, students overwhelmingly selected Life Lab as the overwhelmingly in favorite feature of their school, surpassing all subjects. LLSP is currently conducting an evaluation of the Comprehensive Life Lab Science Program with NSF support.

Where to See It: The Life Lab Science Program is used in 28 states and has key demonstration sites in Alaska, California, the District of Columbia, Florida, Massachusetts, North Carolina, New York, Ohio, Oregon, and South Carolina. The comprehensive program has been field-tested at sites in California, Florida, New York, North Carolina, and Ohio.

Contacts: Gary Appel or Lisa Glick
Life Lab Science Program
1156 High Street
Santa Cruz, CA 95064
(408) 459-2001

The Pittsburgh Science Institute (PSI)

Purpose: To foster improved science education for Pittsburgh schools though a collaboration of various interests in the region.

Description: The Pittsburgh Science Institute (PSI) promotes business, local university, and other support for science education in the Pittsburgh schools. It provides an example of a school district's success in establishing a framework for improvement of science instruction through collaborative partnerships with every major corporate, university, science association or society, and science center in the Pittsburgh metropolitan area. These organizations have joined together with the Pittsburgh Board of Education in promoting and funding activities sponsored by the PSI.

PSI provides a broad array of services to teachers and students in the Pittsburgh schools, including revised curriculum, teacher in-service training, and direct instruction for students in grades K-12 through enrichment programs such as Saturday and summer science academies.

Business and university support is extensive, providing direct financial assistance for PSI activities; employment opportunities for secondary science students; summer and school year workshops in science and technology for teachers; computer hardware and software supplies; and opportunities for science teachers to meet with their counterparts in other regions of the country. Representatives of business and industry also sit on the advisory boards, which support the PSI, and serve as judges for students' science competitions.

Why It Is Promising: Many school districts have an interest in broadening their science education efforts through active involvement with the community. What sets this program apart is the comprehensiveness of the program.

Evaluation: At this time the program has collected only preliminary evaluation information. However, PSI has shown an interest in having the program disseminated to other schools through the National Diffusion Network and is seeking validation through the U.S. Department of Education's Program Effectiveness Panel.

Contact: Doris L. Litman or Ms. Cynthia A. Tananis
The Pittsburgh Science Institute
635 Ridge Avenue
Pittsburgh, PA 15212
(412) 323-3460

Jeffco (Colorado) Middle School Life Science Program

Purpose: To enable students to understand the human body, basic ecological principles, and issues associated with environmental problems, and to make decisions to improve health-related behaviors.

Description: The Jefferson County, Colorado program is a full-year life science course that replaces the curriculum currently being used in general science or life science. It can also be used in an integrated science-health course.

Materials consist of a text that integrates laboratory activities and readings. Topics were defined by life science teachers based on their experiences with students as well as on the recommendations of nationally recognized experts in middle school science curriculum. Content is delivered in a three-phase learning cycle: exploration, concept formation, and application. In the exploration state, students carry out an experiment or investigation, which introduces them to the phenomena and experiences that lead to concept development. Then, students apply the concept in an activity or discussion. Development of thinking skills is emphasized throughout the program.

Why It Is Promising: Currently no other nationally available, middle-level life science program provides an extensive emphasis on ecology and human biology, with integrated laboratory activities and clear application to students' lives.

Cost: For appropriately equipped schools, it costs approximately $800 to establish a classroom with the necessary unique equipment and nonconsumable materials. The Teacher Guide is $34.90 and the Teacher Resource Book is $69.90. Student textbooks cost $24.90 each.

Evaluation: The curriculum was field tested over a two year period with 654 seventh grade-students participating in life science classes. Posttest means of the experimental and control groups were compared for each of four measures of life science achievement, using pretest scores as a covariant.

Where to See it: Visitors are welcome by appointment at the Jefferson County Schools.

Contact:
Harold Pratt
Jefferson County Public Schools
1829 Denver West Drive, Building 27
Golden, CO 80401
(303) 273-6561

Operation Physics

Purpose: To improve the teaching and learning of basic physics concepts in the upper elementary and middle-school grades nationwide.

Description: The project has two primary objectives: to enhance upper elementary and middle school science teachers' understanding of physics, and to provide these same teachers with ideas for effectively teaching their students about physics. To accomplish these objectives, the Operation Physics project has developed and validated a series of teacher workshops on the physics topics

typically included in the science curricula of grades 4-8. These workshops, which have been attended by some 40,000 teachers, are available to upper elementary and middle school teachers in 42 states and the District of Columbia. The workshops are provided by teams of exemplary science educators who have received training and support to conduct Operation Physics programs in their local areas.

Each Operation Physics team is composed of three members, who collectively provide the team with experience in upper elementary/middle school science teaching and a strong academic background in physics. All team members have demonstrated professional activity, proven leadership ability, and successful workshop presentation experience. Teams including university physics and science education faculty, state and district science supervisors, high school physics teachers, and upper elementary and middle school science teachers.

Operation Physics workshops merge content and practice and are flexible to meet local needs and constraints. They are available on a variety of physics-related topics including behavior of light, electric circuits, color and vision, energy, and magnets and magnetism.

Why It Is Promising: Not only do only a small percentage of students study physics in high school, but also minimal physics instruction is provided in the elementary school, often because the teachers lack a background in the physical sciences. This in-service resource addresses these issues.

Evaluation: Results of a long term survey mailed to randomly selected and geographically distributed workshop participants at least six months after workshop attendance reveal that a majority of the teachers who have attended a workshop have since taught (58 percent) or plan to teach (24 percent) their students about the physics topics, many for the first time. The teachers who have already taught their students about the topic indicated that as a result of the workshop they did a better job of teaching (94 percent), felt more confident in their teaching (79 percent), modified their teaching methods (77 percent), and devoted more class time to the topic (71 percent). Their students studied the topic in greater depth (87 percent), enjoyed learning about the topic (71 percent), and understood the physics concepts at the end of the unit (74 percent).

Workshop participants (N = 8,504) gave the workshops held at sites around the country on the 13 different physics topics very high ratings on 20 measures of effectiveness.

Where to See It: Workshops are currently available in 43 states and the District of Columbia. A complete list of sites is available from the American Institute of Physics.

Contact:
Gayle Ater
Education Division
American Institute of Physics
2000 Florida Avenue NW
Washington, DC 20009
(202) 232-6688

Texas Learning Technology Group (TLTG) Physical Science

Purpose: To help secondary school students throughout the United States and Australia rediscover the wonders of physical science through the use of an interactive videodisc-based curriculum. Used

for small-group, large-group, and individual activities, the two-semester curriculum captures students attention.

Description: The curriculum consists of eight units of chemistry, six units of physics, and one introductory unit. The courseware includes 15 videodisc slides, computer software, teacher resource guides, student manuals (summary notes, practice sets, and lab activities), and a technical support guide.

The curriculum units address 15 topics from the disciplines of chemistry and physics with an introduction to physical science unit covering fundamental topics that are applied throughout the course; among these are the nature and structure of matter, chemical bonds, acid-base chemistry, motion and force, work and simple machines, sound and waves, and energy resources for the future.

Training is vital to the curriculum's success. Teachers receive a guide that serves as a road map for the course, including instructional objectives, teaching notes, laboratory activities, and special projects. Two teachers for each classroom implementing TLTG Physical Science receive extensive training. The training is designed to provide the teachers with a comprehensive understanding of the course structure, familiarity with the varied instructional strategies, and proficiency in the use of the delivery system. Follow-up training is available.

TLTG, a nonprofit organization with a board of 15 directors, was formed as a partnership in 1985 to bring advanced learning technology to the classroom. TLTG Physical Science was developed in collaboration with science teachers, science supervisors, and curriculum directors. The founding TLTG partners include the National Science Center Foundation, Inc., 13 Texas school districts, and the Texas Association of School Boards.

Why It Is Promising: The TLTG combines the latest technology with traditional teaching methods in physical science. Students learn through science laboratory activities, teacher demonstrations, written assignments, and innovative videodisc-based instruction. Learning may take place in large-group, small group, or individual activities.

Evaluation: Initial evaluation results of the chemistry semester show that the students using TLTG Physical Science outperformed students not using the curriculum in all evaluation categories. Evaluation results also show a high teacher and student preference for learning with interactive videodiscs. To further substantiate the effectiveness of TLTG Physical Science, 25 additional school districts in four states participated in a year-long evaluation of both the chemistry and physics semesters. Results of this study confirmed the success of the curriculum.

TLTG Physical Science is endorsed by the National School Boards Association and the school board associations in Arkansas, Florida, Kansas, Michigan, New York, North Carolina, Tennessee, Texas, and Wyoming.

Where to See It: Participating school districts are located in Arkansas, California, Illinois, Indiana, Louisiana, Michigan, New Mexico, North Carolina, Texas, and Washington.

Contact: Paula Hardy
Texas Learning Technology Group
P.O. Box 2947
Austin, TX 78768-2947
(512) 467-0222
(800) 580-9584

Hands-on Elementary Science

Purpose: To give students in grades 1-5 direct, hands-on experiences that emphasize the development of science processes as an approach to solving problem.

Description: The Hands-On Elementary Science program is a complete science curriculum for grades 1-5 that was developed over a six-year period by teachers and other educators. The program emphasizes hands-on instruction to foster positive attitudes, the development of problem solving skills, and an understanding of the nature of science. Students learn by actually doing science.

The primary goal of this curriculum is for students to develop an understanding of and a positive attitude toward science by directly participating in its activities. A second goal is for students to experience and become skilled in some of the major processes of science in order to become independent scientific learners. A third goal is for students to learn important science concepts by interacting with the phenomenon that exemplifies the concept prior to the presentation of the corresponding science vocabulary and operational definitions.

Why It Is Promising: This is a non-textbook-based program that provides elementary students with hands-on instruction emphasizing the processes of science. It increases the amount of teacher time devoted to science instruction as well as changing the instructional emphasis placed on process/inquiry skills.

Evaluation: A study showed that the Hands-On Elementary Science Program resulted in greater motivation for both teachers and students than other text-based science programs. Other data indicated that this program also placed greater emphasis on the processes of science and required more hands-on activities of both teachers and students. A subsequent study indicated that with appropriate training and materials, regular elementary classroom teachers can easily implement the program.

Costs: The cost of the program in the installation year is approximately $18.20 per child, assuming a school with two teachers per grade for grades 1-5 and a class size of 27 students. This figure includes 10 curriculum guides and two and one-half days of training by project staff including expenses, five sets of experiment materials kits, and five replacement packs of materials.

Where to See It: The program is being used in many school systems in Maryland. It is used in schools in 37 states nationwide.

Contact: Helen G. Herlocker
Hands-On Elementary Science Dissemination Center
Carroll County Public Schools

55 North Court Street
Westminster, MD 21157
(301) 848-5050

ChemCom: Chemistry in the Community

Purpose: To introduce the principles of chemistry to students who do not plan careers in science through a year-long course that presents chemistry topics at increasing levels of complexity and anchors knowledge and concepts in the real world.

Description: Each of ChemCom's eight units centers on a chemistry-related technological issue now confronting our society and the world: water, resources, petroleum, food, nuclear chemistry, air and climate, chemistry and health, and chemistry and industry. Each topic serves as a basis for introducing the chemistry needed to understand and analyze it. The content and flexibility of ChemCom are intended to aid the teacher who wishes to teach chemistry that will have immediate relevance for all students by providing experiences that will give them an understanding of the basic chemistry behind everyday phenomena such as soap or food additives, as well as issues such as acid rain, nuclear power, and recycling.

The ChemCom text presents most traditional concepts and methods, including qualitative analysis; reactions; organic chemistry; gas laws; energy; lab techniques such as titration, distillation, and gas generation and collection; and calculations such as molarity and percentage composition.

Why It Is Promising: In building science literacy, it is important that more students study chemistry; ChemCom is popular with those students not planning a career in science.

Evaluation: The course was field tested in 13 states by some 9,000 students. It was reported that "many ChemCom pilot students express positive views about learning chemistry in light of their ability to apply the concepts, facts, and skills to everyday concerns and major issues confronting society." Seventeen states have adopted or listed ChemCom as an approved/supplemental text.

Costs: Cost information on program components is available from Kendall/Hunt Publishing. These components include a student text, teacher guides, standardized exam, ACS Newsletter, Computer Bulletin Board, user groups, and workshops for training teachers.

Contact: Dr. Ann Benbow
Academic Programs
Education Division
American Chemical Society
1155 Sixteenth Street NW
Washington, DC 20036
(202) 872-6179

Kendall/Hunt Publishing
2460 Kerper Boulevard
Dubuque, IA 52001
(800) 258-5622

Insights--Improving Urban Elementary Science: A Collaborative Approach

Purpose: To teach science to elementary-school students in urban systems challenged by large numbers of low-income, minority, and children with special needs. A follow-on program for 7th- and 8th-grade students is being developed.

Description: This elementary curriculum presents themes, topics, and natural phenomena for investigation drawn from the life, physical, and earth sciences. Where appropriate, the experiences are tied to an urban setting. The curriculum will consist of modules organized around five themes: systems, change, structure and function, diversity, and cause and effect.

Teachers helped design the activity-based modules. Six large cities have collaborated in the development work to ensure that the program meets the needs of a number of urban systems operating under a variety of state and local mandates. The new modules integrate science with the rest of the elementary curriculum, particularly language arts and mathematics.

In the 7th- and 8th-grade curriculum, program modules will integrate scientific concepts and understandings from the physical, human and health, life, and earth sciences, within the context of science, society, and technology problems. Developers of the curriculum are building on the conceptual framework and pedagogical strategies, school district partnerships, teacher training design, and assessment and publishing partnerships of the elementary program. School districts and teachers in six major cities are helping in the field development and testing. Operation SMART, a research and development project for Girls Incorporated (formerly Girls Clubs of America), will consult on informal science education strategies that are particularly responsive to urban youth and will complement the curriculum.

Why It Is Promising: Developers of this program have closely studied problems and issues in urban education and have developed a science program to meet the complex problems of urban adolescents, both to assure science literacy and to encourage urban youths to explore science as a career.

Evaluation: This NSF-supported program was field tested in sites around the country, and formative evaluation data have been collected and analyzed. Negotiations with a publisher are under way.

Where to See It: School districts and teachers in Boston, Cleveland, Los Angeles, San Francisco, Baltimore, and Montgomery County, Maryland, have collaborated in the development effort and field testing.

Contact:

Judith O. Sandler
Carolee S. Matsumoto
Educational Development Center
55 Chapel Street
Newton, MA 02160
(617) 969-7100

PRISMS: Physics Resources and Instructional Strategies for Motivating Students

Purpose: To relate physics to the lives of high school students and to stimulate students to develop their reasoning and science problem-solving skills. The program is especially appropriate for those students who need additional motivation to learn the concepts and practical applications of physics.

Description: PRISMS blends exploratory activities, concept development, and application activities into a learning cycle. The concepts addressed in the PRISMS Teacher Resource Guide are those typically included in most high school physics courses including kinematics, dynamics, work and energy, internal energy and heat, wave phenomenon, electricity and magnetism, and atomic and nuclear physics. Activities involving cars, bicycles, balloon rockets, dart guns, sailboats, and the like are used to teach the major concepts in physics. Exploration activities encourage students to observe relationships, identify variables, and develop tentative explanations of phenomenon. Concepts are introduced through the experiences in this exploration phase. The student tests the generalization through observations in the application stage.

Why It Is Promising: The percentage of high school students who study physics is low, and a program such as this provides the additional motivation for students to learn the concepts and practical applications of physics.

Evaluation: During one academic year of physics instruction, students in grades 10-12 showed a significantly greater gain in physics achievement than did a comparable control group, which used conventional materials and teaching strategies. Gain was measured using two forms of the New York Regents' Physics Examination on a pre/posttest basis. PRISMS students also had higher gains in reasoning and science problem-solving skills than did a control group that used conventional materials and strategies. Change was measured by using two forms of the Test of Integrated Process Skills (TIPS) on a pre/posttest basis.

Costs: The cost for PRISMS materials, including the teacher resource guide, two videotapes, and a test bank of questions for evaluating student learning is $150. The cost for training 30 teachers for one-week is approximately $130 per teacher.

Where to See It: The project is in schools nationwide.

Contact:
Dr. Roy D. Unruh
PRISMS Project Office
Physics Department
University of Northern Iowa
Cedar Falls, IA 50614
(319) 273-2380

Improving Science Curricula for Students with Disabilities

Purpose: To assess the appropriateness of general education (K-8) curricula in science for students with disabilities.

Description: The project is using a cross-grade (e.g., primary, elementary, and middle grades) approach to determine how compatible of the scope, sequence, and presentation of science curricula are with the learning characteristics and needs of students with disabilities in mainstream classrooms. The project is analyzing traditional and alternative curricular approaches and textbook materials to develop and field-test guidelines for use by publishers and developers, administrators, teachers, and district- or state-level curriculum evaluation committees.

Why It Is Promising: The project's curricular analyses and guidelines will provide a means for determining the appropriateness of general education science curriculum for students with disabilities. The analyses and guidelines should help supervisors, teachers, and diagnostic personnel determine the extent to which the curriculum needs to be modified to accommodate students with disabilities.

Contact: Margo A. Mastropieri
Thomas E. Scruggs
Project Directors, Purdue Research Foundation
Hovde Hall, Third Floor
West Lafayette, Indiana 47907

Sources of Further Information

American Association for the Advancement of Science (AAAS)
1333 H Street NW
Washington, DC 20005
(202) 326-6400

The American Association for the Advancement of Science engages in a wide range of science education in addition to Project 2061, which is an attempt to identify the fundamental concepts of science and mathematics that all students should know. AAAS reviews science education materials and holds a forum each autumn on topics of current interest in science education.

CREATE Evaluation and Assessment Laboratory
University of Alabama
P.O. Box 870231
Tuscaloosa, AL 35487
(205) 348-1187

Contact: Dr. Judy Burry

This project is designed to develop instrumentation for and assessing the effectiveness of science teachers in grades 4-8.

Education Development Center (EDC)
55 Chapel Street
Newton, MA 02160
(617) 969-7100

Contact: Patricia Sacco

Education Development Center, Inc., is an international research and development organization dedicated to improving the quality and effectiveness of education throughout the world. Working throughout the United States and in 75 other countries, EDC is a leader addressing a wide range of educational, health, and social problems.

EDC brings people together to solve common problems. Offices in Newton, Massachusetts, and Washington, D.C., provide project management; field offices are established as needed at project sites throughout the world. EDC currently manages more than 80 long-term projects funded through grants and contracts from United States local, state, and federal agencies, international agencies, foreign governments, publishers, foundations, universities, and private industry.

Education Resources Information Center
Clearinghouse on Science, Mathematics,
and Environmental Education (ERIC/SMEAC)
1220 Chambers Road, Room 311

Columbus, OH 43212-1792
(614) 292-6717

Contact: Dr. David Haury, Director

Education Resources Information Center is a nationwide information network that acquires, catalogues, and provides access to education literature. The ERIC data base contains more than 650,000 documents and articles on education-related topics, and information is available in more than 3,000 locations. The ERIC system consists of 16 clearinghouses, a central processing reference facility, and ACCESS ERIC, a one-stop contact point for new users of the system. Although all the clearinghouses address mathematics and science when relevant to their specific mission, the clearinghouse located at the Ohio State University specifically focuses on mathematics, science, and environmental education. This clearinghouse generates syntheses and summaries on mathematics and science topics, as well as compilations of promising programs and practices.

International Clearinghouse for Advancement of Science Teaching
University of Maryland
Benjamin Building
College Park, MD 20742
(301) 405-3161

Contact: David Lockard, Director

The International Clearinghouse provides information about science and mathematics curricula, offers reference and referral services, and conducts training and workshops.

Lawrence Hall of Science (LHS)
University of California, Berkeley
Berkeley, CA 94720
(415) 643-8980

Contact: Barbara Ando

The mission of the Lawrence Hall of Science, in operation since 1968 at the University of California, Berkeley, is to increase public understanding of science. LHS offers new ideas, experience with the latest research equipment and teaching techniques, and summer jobs in industry settings to some 12,000 teachers each year. LHS has developed a host of innovative hands-on science programs for children and has pioneered preschool science education, with the aim of reaching children before they become bored or intimidated by science. Used in more than 20 percent of the nation's schools, the Science Curriculum Improvement Study (SCIS) was the first laboratory-based curriculum for elementary school children. Outdoor Biology Instructional Strategies (OBIS) introduces students to environmental and biological concepts using their local parks and communities as laboratories.

Leadership Institute for Science Education Center (LISE Center)
Central Connecticut State University
1615 Stanley Street
New Britain, CT 06050

Office of Educational Research and Improvement
U.S. Department of Education
(202) 219-6035

Contact: Wanda Chambers

The LISE Center, sponsored by the National Science Supervisors Association, provides programs that develop leadership skills in knowledge-based development.

National Academy of Sciences (NAS)
2101 Constitution Avenue NW
Washington, DC 20418
(202) 334-2000

NAS not only maintains a permanent research arm, the National Research Council, but also mounts studies through its various commissions. NAS has been a leader in the mathematics reform movement through the Mathematical Sciences Education Board and is now attempting to bring consensus to the science fields as well.

National Center for Improving Science Education
The Network, Inc.
300 Brickstone Square
Suite 900, Andover, MA 01810
(508) 470-1080

Contact: Susan Loucks-Horsely

The Network, Inc.
2000 L Street, Suite 603
Washington, DC 20036
(202) 467-0652

Contact: Senta Raizen

The Center, recipient of a recent U.S. Department of Education grant, identifies the gaps in science education and prepares reports, guidebooks, and other publications to bridge research and practice in science assessment, science curricula, and science teaching.

National Center for Science Education
P. O. Box 9477
Berkeley, CA 94709
(415) 843-3393

Contact: Eugene Scott, Director

The National Center for Science Education provides assistance to local groups working to encourage science education by counseling school personnel, collecting and disseminating information, and

sponsoring workshops. The NCSE specifically supports the study of evolutionary sciences and opposes the teaching of creationism as part of public school curricula.

National Center for Science Teaching and Learning
The Ohio State University
Room 104, Research Center
1314 Kinnear Road
Columbus, OH 43212-1194
(614) 292-3339

Contacts: Arthur L. White, Director
Michael Klapper, Co-Director

The National Center for Science Teaching and Learning, which is an Educational Research and Development Center of the U.S. Department of Education, is conducting research on the external factors influencing science teaching and learning. The center focuses its research activities in the following areas that influence science education: (1) social and cultural factors; (2) public expectations and societal initiatives; (3) school organization and policy; (4) new technologies; and (5) integration of science across content areas. In the area of social and cultural factors research, researchers are examining the gap between science research and practice, the relevance of science learning, and cultural and social diversity in science learning. In the area of public expectations and societal incentives, researchers are examining students' incentives for selecting science and science-related careers and developing strategies and programs to modify incentive structures. In the area of social organization and policy, researchers are identifying, developing, and evaluating strategies for organizational, economic, and political changes that influence science teaching and learning. In the new technologies area, researchers are exploring how technology can change students' science experiences and can integrate classroom science with the "real world." In the integration of content area, researchers are investigating the effects of integrating the teaching and learning of science with other content areas by varying the criteria for the selection and sequencing of learning activities.

National Diffusion Network (NDN)
Office of Educational Research and Improvement
U.S. Department of Education
555 New Jersey Avenue NW
Washington, DC 20208
(202) 219-2153

Contact: Linda Jones

NDN promotes nationwide dissemination and adoption of exemplary educational programs, products, and practices that have received approval from the Program Effectiveness Panel of the U.S. Department of Education. School systems can replicate the mathematics education programs to meet national math goals. NDN is dedicated to helping local districts, intermediate service agencies, state departments of education, and secondary institutions in improving educational opportunities for all students. A catalogue describing a total of over 400 projects in NDN is available.

National Science Resources Center
Arts and Industries Building, Room 1201

Smithsonian Institution
Washington, DC 20560
(202) 357-2555

Contact: Douglas Lapp, Executive Director

The National Science Resource Center is an organization of the Smithsonian Institution and the National Academy of Sciences that was established to improve the teaching of science and mathematics in the nation's schools. The center maintains a collection and data base of teaching resources, develops and disseminates curriculum materials for teachers, and sponsors outreach activities to help school districts improve their science programs.

National Science Teachers Association
1742 Connecticut Avenue NW
Washington, DC 20009
(202) 328-5800

Contact: Bill G. Aldridge, Executive Director

In addition to providing services to its members, NSTA supports major programming, such as the Scope, Sequence, and Coordination project, and is the source of many important publications in the field.

Research Programs at the National Science Foundation (NSP)
Research in Teaching and Learning
Directorate for Education and Human Resources
National Science Foundation
1800 G Street NW
Washington, DC 20550
(202) 357-7071

Contact: Dr. Ray Hannapel

NSF supports research in mathematics and science through its Research in Teaching and Learning Program in the Division of Materials Development, Research, and Informal Science Education. Projects address learning and teaching by people of all ages, in a variety of settings including elementary and secondary schools, postsecondary institutions, and informal settings such as homes and museums. About a fourth of the projects focus on aspects of problem solving, while other projects are directed toward devising and studying new ways of teaching and learning concepts that many students find difficult. About a fourth of the projects seek to understand motivational, attitudinal, or affective factors in learning and teaching. More than a third of the projects involve learning and teaching with the aid of computer based tools.

Science Competitions and Olympiads

International Chemistry Olympiad
American Chemical Society

1156 16th Street
Washington, DC 20036

Contact: Martha Turckes

International Mathematical Olympiad
MAA Committee on American Mathematics Competitions
Mathematics Department
University of Nebraska
Lincoln, NE 68588

Contact: Walter Mientka, Chair

International Physics Olympiad
5112 Berwyn Road
College Park, MD 20740

Contact: Ellen Layman

Science competition programs for students identify, reward, and encourage secondary school students who excel in science. For example, the Olympiads are programs at very high levels of international competition for extremely able students. A rigorous selection process results in teams of students who travel abroad for several days of tests and activities.

The Westinghouse Talent Search is another competition that focuses on independent research projects and offers scholarships to high school seniors with exceptional talent in science, mathematics, and engineering.

Smithsonian Institution/Office of Elementary and Secondary Education
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Contact: Janice Majewski, Director, Outreach Programs

The Smithsonian Institution's outreach program helps teachers incorporate museums and other community resources into their curricula. The Smithsonian encourages experiential object-based learning of topics such as the phenomenon of sight, animal behavior, and the United States census. Seminars, courses, symposia, and internship programs are offered.

Chapter 6

History

Current Thinking

Context

During the past several years a series of critical books and commission reports have argued for improving the study of history in our schools. These documents propose that history be placed at the center of our children's education in social studies and citizenship. They argue for more history in the schools presented with greater depth, liveliness, and rigor.

The recent books and reports advocating strengthening history in the schools rest on two conclusions: students know too little of American or world history, and students study too little history of any kind.

Students Know Too Little of American or World History

Recent reports have delineated what students know about history. The 1986 National Assessment of Educational Progress (NAEP) assessment of U.S. history and literature knowledge of 17-year-olds concluded that the students' overall performance was extremely weak. The typical student scored in the 50th percentile range on the history assessment and top quartile students averaged in the 70th to 79th percentile.

For example, two-thirds of all students could not place the Civil War in the correct half-century. Even among the top quartile students, three of ten could not place the Civil War in the proper half-century. Authors of a report on the results of this assessment "contend that it is impossible to understand American history at all if one lacks any idea of when the Civil War occurred. It is not only the single most traumatic and decisive domestic event since the thirteen colonies won their independence from Britain; it is also the anchoring event of the nineteenth century, the climactic conflict to which other major events led and from which many others resulted" (Ravitch and Finn 1987).

The 1988 NAEP assessment of U.S. history knowledge of 4th, 8th, and 12th-grade students in 1988 concluded that "across the grades, most students have a limited grasp of U.S. history." More than half (54 percent) of the 12th-grade students, and 87 percent of 8th-graders, did not understand basic historical terms and relationships, e.g., that soldiers fighting for the South in the Civil War were called Confederates. Less than one in 20 12th-graders could interpret historical information and ideas.

Students Do Not Study Enough History

Students know little of American or world history or the history of Western civilization because they study little of it in school, and what they do study is not effectively learned. The Bradley Commission (1988) was established in reaction to the growing public awareness that history, like

other core academic subjects, had declined in quality and quantity in the schools. The Bradley Commission described the results of its survey of state requirements in history as dismal. The commission concluded that 15 percent of students do not study U.S. history in high school. Few states or communities required more than one year of American history. The Bradley Commission concluded that half of high school students do not study European or world history in those years. Four states do not mandate any American history in high school, and 34 states do not require any world history. The once common 11th-grade course in American history is no longer universal, and the Bradley Commission discovered that many school districts allowed optional classes, sometimes called "area studies", with little history content, to substitute for the 8th-grade U.S. history course. The commission found that many high school students can satisfy their social studies requirements by taking courses on current events, drug or sex education, civics, or values education and never take a history course.

The Bradley Commission historians noted, "History is typically a forgotten subject in the elementary schools where an 'expanding environments' approach assumes that preadolescents cannot understand historical concepts" but should instead be limited to a virtually content-free curriculum of studying first themselves, then the family, neighborhood, and community. History reformers have challenged the expanding environments approach installed by professional educators in the 1920s and 1930s, and by now a virtual national curriculum, as lacking any cognitive or developmental research or theory base. Scholars of childhood development have criticized the expanding environments approach as being vapid and boring, and limiting the intellectual growth of children. By contrast, these and other scholars, Crabtree (1989) notes, "specifically propose history and literature as developmentally appropriate studies for the young child."

In the high school, history similarly was displaced by other studies. The Cardinal Principles of Secondary Education of 1918, one of the most important documents in the history of American education, declared that the mission of modern schooling was social efficiency. With acceptance of this utilitarian approach, the erosion of history in high schools began almost immediately. Courses in current events, modern issues, and student-focused units gradually supplemented history in the core curriculum (Jackson and Jackson 1989).

Why Study More History?

The philosopher Philip Phenix at Teachers College, Columbia University, wrote that "history and literature are essentially concretizing presentations of human experience and are therefore best suited as a basis for social studies." Phenix said that the virtues of history for children are its ability to provide vicariously "a sense of personal involvement in exemplary lives and significant events, and to supply an appreciation of values and vision of greatness, all this within the context of moving narrative and dramatic appeal" (Crabtree 1989).

This is just what the elite private schools do, Ravitch (1987) notes, and she observes that, except in such schools and in the homes of highly motivated parents, "children are no longer reading or hearing the stories that are deeply woven into Western literature and history."

The Need to Study American History

The Bradley Commission said that historical study should "focus upon broad, significant themes and questions, rather than short-lived memorization of fact without context." The historian and student of history education Paul Gagnon (1988) said that the first of these themes must be the story of American democracy. "This means political history, broadly defined...the story of the slow unsteady

journey of liberty and justice, together with the economic, social, religious, and other forces that barred or smoothed the way, and with careful looks at advances and retreats made, and the distance yet to be covered." Gagnon asserts that three questions are central to civic education: "What conditions have nurtured democratic society? What ideas, values, and educational forces have promoted freedom and justice? What have Americans in each generation done to extend democracy, and what needs doing still?" Together with these themes of the evolution of democratic ideas and practices, Gagnon also suggests themes on the diversity of the many peoples who make up our society and are still changing it, the economic transformation of America, and the evolution of our role in the world.

Gagnon points out that events prior to the establishment of the American colonies "and elsewhere have directed our national life." But history textbooks used in the schools barely sketch the "old world sources of the American mind and of American institutions." Because the curriculum does not require prior study of Western civilization, the intellectual background of the American Revolution, perhaps our single greatest moment, and the making of the Constitution are not fully grasped by our students. They do not understand, but need to comprehend, the 17th and 18th century climate of thought known as the European Enlightenment that formed the minds of the founders.

The Need to Study the History of Western Civilization: Our Own Tradition and Common Culture

Ravitch and Finn point out that there have been heated debates in recent years about whether school-children should study the history of Western civilization. Advocates of this study such as Kagan (1990) point out the United States is not a nation as Sweden or Japan are a nation--a group of people with a common ancestry. But Kagan asserts that it should be obvious to an objective observer that what Americans "have in common and what brings them together is a system of laws and beliefs that shaped the establishment of the country, a system developed within the context of Western Civilization."

Constitutional government and democracy are not natural blessings, Kagan points out; they are uncommon today and have been rare in history. "They are the product of some peculiar developments in the history of Western civilization, and they...need to be understood by all our citizens if our way of governing ourselves is to continue and flourish."

What is most remarkable and essential about the Western tradition is the ways it has departed from other experience. "More than any other it has asserted the claims of the individual against those of the state, limiting its power and creating a realm of privacy into which it cannot penetrate." Kagan believes that "Western culture and institutions are the most powerful paradigm in the world today."

The Need to Study Other Cultural Traditions to Understand Our Own

Students need to have enough knowledge of our own cultural tradition to know how it got to be the way it is. The philosopher John Searle (1990) observed that in the United States the dominant tradition is the European tradition. "The United States is, after all, a product of the European Enlightenment." But Searle continues, "you do not understand your own tradition if you do not see it in relation to others. Other cultural traditions need to be studied as well."

Kagan believes that "it is both right and necessary to place Western civilization...at the center of our studies." Others maintain that students also should learn about other major nations and cultures to be

well informed about the world we live in. Dunn (1989), for example, argues that a shortcoming of the traditional Western civilization course is a presumption that the rise of Europe and the United States can be adequately explained by examining the history of the West, "neglecting the world context into which each age of Western history was born." As Gagnon put it, "events early and elsewhere have directed our national life," and these events were not only on the rims of the North Atlantic and the Mediterranean.

The study of other cultures is also intrinsically interesting. Examining other cultures reveals the variety of life in the world and helps students develop a more cosmopolitan outlook.

The Multiculturalism Debate

Modern historians see history not as an attempt at objective, neutral science but as an interpretive practice, history as a changing discipline. Historians are committed "to accuracy and to procedures of verification and documentation" but are more likely today to see knowledge of the past as not absolute and as always open to revision and debate (Scott 1989). Recent historians have focused on the heterogeneity of the American past as their subject of study. The historical net has been widened to include peoples and cultures not always included in past historical investigation (Levine 1989).

There is a broad agreement among historians and educators on the need to study the history of all areas of the world, including U.S., Western, and world history. There is agreement, also, on integrating into history instruction the history of men and women of all races, classes, and conditions (Bradley Commission 1988; National Commission on Social Studies, 1989).

The schools have been incorporating into the curriculum what has been described as "cultural democracy"--seeking a broader interpretation of the common American culture. This broader curriculum is a response to the recognition that students must understand the diverse people and culture of the United States to understand our society. Much of this effort has been based on sound scholarship and has led to important revisions of what children are taught and read.

There are those who deny that a common culture exists or is possible. The 1991 New York State social studies curriculum guidelines, for example, focus on groups based on race, ethnicity, class, and sex. Instead of a history of America, these guides encourage plural histories of different groups.

The 1987 California History-Social Science curricular framework, a major reform document, declares that the United States is a multicultural nation in the sense that its history has been formed through the contributions of people from all parts of the world. But it emphasizes the concept of e pluribus unum, the premise that out of many people and individuals, we are one nation, united by common values and democratic principles that were first articulated by America's founders, expanded over time, and tested through civil war, westward expansion, industrial growth, massive immigration, civil rights struggles, and worldwide conflict against the totalitarianism of Nazism and communism.

How Much History Is Needed?

The Bradley Commission's 1988 report recommended that in the early primary school years (K-6) the social studies curriculum should be history centered. The commission outlined three patterns, or alternative course sequences, that moved from the expanding environments approach to a curriculum with a historical dimension, infusing it with historical, literary, and biographical content. For the middle and high schools, the commission concluded that "the curricula time essential to develop the

genuine understanding and engagement necessary to exercising judgment must be considerably greater than that presently common in American school programs in history."

Following on a history-centered curriculum for the primary years, the commission recommended at least four years of history in grades 7-12. This minimum would be divided into two years necessary to teach American history to an acceptable level of content and sophistication, and two years to present the necessary combination of Western and world history.

Ravitch and Finn (1987) also urge that far more time be devoted to the study of history and that it should be studied from the earliest grades through high school. (See also National Commission on Social Studies 1989; American Federation of Teachers 1987.)

> Historical studies should be part of every year of junior high school, and at least three of the four years in high school. Ten or eleven years of sequential study of history of the United States and the rest of the world seems like a lot compared to the three or four years now available in most states and school districts; yet it is barely time enough to develop in-depth understanding of our own country and substantial portions of the rest of the world (Ravitch and Finn 1987).

They also recommend at least two years study of world history. At a minimum, they believe, students should study the history of Western civilization for a full year, and the history of other major nations and cultures for another full year.

What History to Teach

Content, Concepts, and Skills. Does a mastery of the content material of historical study exclude the development of higher order thinking skills? Most reformers and history professionals consider the juxtaposition of content (or facts) versus thinking (and concepts) as a false dichotomy. They contend that an understanding and explication of historical content requires higher-order thinking. Moreover, background knowledge is essential for the higher-order thinking required to grasp the complexity of historical causation and to appreciate the often tentative nature of judgments about the past. Good history requires the assimilation of knowledge of essential content, higher-order thinking, and sophisticated conceptual understanding (Gagnon 1989; Ravitch and Finn 1987; California State Department of Education 1988).

Ravitch and Finn (1987) concluded that most history class time is occupied by listening to the teacher, using the textbook, or taking a test. They recommend that the study of history be enlivened by the frequent use of narratives, journals, stories, biographies, and autobiographies. Students, they believe, need to understand that history is not just a social, economic, and political unfolding of impersonal forces but also the decisions, beliefs, actions, and struggles of people who shaped the world.

Emphasis on the Role of Individuals in History. There is a renewed interest in the role of individuals in history (Ravitch and Finn 1987). Stressing the human dimension, history reformers recommend calling attention to the accomplishments and struggles of individual men and women, and the ways in which their lives have shaped events. They contend that reading biographies often stirs students' imagination and heightens their interest in history.

At the same time, scholars such as Gertrude Himmelfarb (1991, 1987) have emphasized the significance of individual will (for good or ill) in historical events (e.g., the actions of Churchill,

Hitler, and Stalin in the 20th century). Furthermore, it is argued that democratic societies, in particular, should recognize and study the influence of individuals because the well-being of democracies depends on responsible citizen participation.

Ravitch and Finn (1987) find it unfortunate that narrative history has been out of favor in the past generation, because

> history as a tale well told is both an honorable tradition and a powerful teaching tool. Many of the great historians have achieved renown because of their power as storytellers, their ability to write absorbing accounts that are as exciting as fiction. Even young people who genuinely like the study of history have been wrongly persuaded that a thrilling story can't possibly be history.

The Bradley Commission also emphasized the teaching of history by "thick narrative" combining lively story telling and biography with conceptual analysis drawn from every relevant discipline.

Narration and Chronology in History. Just as chronological history was derided by social studies educators, so was the narrative approach to history. These factions failed to comprehend that chronology (and narration) are basic organizing concepts in the study of history, in that they help make sense of events in the past and the relationships among them (Ravitch and Finn 1987).

> Those who do not know the sequence of events cannot understand relationships among them, cannot imagine how one affected the other, nor speculate about causes and effects. Without knowledge of chronology, everything that happened in the past becomes truly puzzling, because there is no way of spotting patterns, sorting our sequences, or seeing connections. Without a secure sense of chronology, all that remains of history is a stew of facts and meaningless concepts.

The Harvard historian Simon Schama (1991), despairing of the bloodless approach to history instruction common in our schools today, urges that "history needs to be liberated from its captivity in the school curriculum, where it is held hostage by that great amorphous, utilitarian discipline called social studies."

Summary

The National Council for History Education has been created to carry on the work of the Bradley Commission. Its overriding message--repeated by the National Commission on Social Studies in its 1989 report, Charting a Course--is that teachers need more time in the curriculum to offer more and better history. The better history advocated by the council is listed in nine points that summarize much of the previous discussion. History courses should

1. combine an analytical, chronological narrative with frequent pauses for studies in depth.

2. deal constantly with the relationship between fact and concept, neither of which educates without the other.

3. carry significant, compelling themes and questions from the start of United States and world history down to the present day, frequently responding to the students' challenge: "So what?"

4. demonstrate the interdependence of history and the social sciences, by teaching the concepts of the latter in dramatic historical context.

5. demonstrate the interdependence of history and the humanities, by concurrent studies of literature, philosophy, and the arts.

6. be pluralist, multicultural, inclusive of people of all kinds and conditions in whatever society is under study.

7. provide a sophisticated understanding of the origins, the advances and defeats, and the worldwide adventures of the democratic ideas that bind us together as one people.

8. offer many chances for active learning, inquiry, and development of a critical historical approach.

9. be taught by a wide diversity of pedagogical methods, of the teacher's own choice and design.

Next Steps

In fall 1991, the U.S. Department of Education awarded a grant, in collaboration with the National Endowment for the Humanities, to the National Center for History in the Schools, to develop voluntary national standards in American history and world history. The center will engage in a broad review process involving every organization concerned with history, social studies, and social science in elementary and secondary education. The project is expected to be completed in the summer of 1994.

Suggested Reading List

American Federation of Teachers. 1987. Education for Democracy: A Statement of Principles, Guidelines for Strengthening the Teaching of Democratic Values. Washington, DC: American Federation of Teachers. Calls for a reordering of the curriculum around a core of history and geography to raise the level of education for democratic citizenship.

Bradley Commission on History in Schools. 1988. Building a History Curriculum: Guidelines for Teaching History in Schools. Washington, DC: Educational Excellence Network. ED 310 008. Explores the conditions that help or impede the teaching of history in the schools, makes recommendations for the history curriculum, and suggests ways to improve the teaching of history.

California State Department of Education. History-Social Science Curriculum Framework and Criteria Committee. 1988. History-Social Science Framework for California Public Schools, Kindergarten Through Grade Twelve. Sacramento: California State Department of Education. ED 293 779. The framework contains goals and course descriptions for history and geography curricula in the California public schools and criteria for evaluating instructional materials.

Crabtree, Charlotte. 1989. "Returning History to the Elementary Schools." In Paul Gagnon, ed., Historical Literacy: The Case for History in American Education. New York: Macmillan 1989. (Paperback edition, Houghton-Mifflin, 1991.) Analyzes the shortcomings of the contemporary social studies curriculum in schools and presents an argument why it should be replaced by a history-centered curriculum.

Dunn, Ross E. 1989. "Central Themes for World History." In Paul Gagnon, ed., Historical Literacy: The Case for History in American Education. New York, Macmillan. (Paperback edition, Houghton-Mifflin, 1991.) Presents an argument for the necessity of including the study of world history in schools.

Gagnon, Paul, ed. 1989. Historical Literacy: The Case for History in American Education. New York: Macmillan. 1989. (Paperback edition, Houghton-Mifflin, 1991.) A follow-up volume to the Bradley Commission report which extends the arguments and spells out the implications of the commission's report and includes a reprint of the report.

Gagnon, Paul. 1988. "Why Study History?" Atlantic Monthly (November) 43-66. Presents an extended argument for the importance of studying history.

Himmelfarb, Gertrude. 1987. The New History and the Old. Cambridge, MA: Belknap Press/Harvard University Press. Himmelfarb's book and lecture emphasize the influence of individuals on history.

_____. 1991. "Of Heroes, Villains, and Valets." 1991 Jefferson Lecture of the National Endowment for the Humanities. Washington, DC: National Endowment for the Humanities.

Jackson, Kenneth T. and Jackson, Barbara B. 1989. "Why The Time Is Right to Reform the History Curriculum." In Paul Gagnon, ed., Historical Literacy: The Case for History in

American Education. New York:Macmillan. (Paperback edition, Houghton-Mifflin, 1991.) Argues that the political and psychological climate in the final decade of this century may be more receptive to curricular reform than at any time in the previous eight decades.

Kagan, Donald. 1990. "E Pluribus Unum." Address to the Yale College Class of 1994, September, processed. Presents a historical argument for the necessity of placing Western civilization at the center of our students' studies.

Levine, Lawrence W. 1989. "The Unpredictable Past: Reflections on Recent American Historiography. " American Historical Review 94:671-79. Levine argues that there are not only changing interpretations of past events by historians, but also that there are changing notions of which events and people are the focus of historical study.

National Assessment of Educational Progress. 1990. The U.S History Report Card: The Achievement of Fourth-, Eighth-, and Twelfth-Grade Students in 1988 and Trends from 1986 to 1988 in the Factual Knowledge of High-School Juniors. **Princeton, NJ: Educational Testing Service. ED 315 377.** A national survey of the adequacy of U.S. history knowledge by 16,000 students conducted during the spring of 1988.

National Center for History in the Schools. 1992. Lessons from History. **Los Angeles: National Center for History in the Schools.** Addresses the central questions concerning history in the schools and provides a rationale and recommendations for the essential understandings, documentary materials, and "habits of the mind" that should be developed in precollegiate instruction in American and world history.

National Commission on Social Studies in the Schools, Curriculum Task Force. 1989. Charting A Course: Social Studies for the 21st Century. **Washington, DC: National Commission on Social Studies in the Schools. ED 317 450.** Makes recommendations for curricular reform in the schools in the several disciplines contained within social studies.

Ravitch, Diane. 1987. "Tot Sociology or What Happened to History in the Grade Schools." American Scholar **(Summer) 56:343-54.** Analyzes the inadequacy of the social studies curriculum in the early primary school grades.

Ravitch, Diane, Chester E. Finn, Jr. 1987. What Do Our 17-Year Olds Know? A Report on the First National Assessment of History and Literature. **New York: Harper and Row.** A national survey of 8,000 seventeen-year-olds conducted in early 1986, to assess their knowledge of history and literature; also includes proposals for improving the teaching and learning of history and literature.

Schama, Simon. 1991. "Clio has a Problem" New York Times Magazine, **September 8.** Argues that historical writing and instruction need to be restored to the narrative forms by which they can catch the public's imagination.

Scott, Joan Wallach. 1989. "History in Crisis? The Others' Side of the Story." American Historical Review, 94:680-92. Argues that historical study is a changing discipline, and that the new notions of which people and events should constitute the subjects of historical study engage history in some of the major philosophical debates of our age.

Searle, John. 1990. "The Storm Over the University." New York Review of Books **(December 6) 34-42.** Reviews and analyzes the intellectual dispute over the content and purpose of liberal education in American colleges and universities.

Examples of Promising Projects

National Center for History in the Schools (NCHS)

Purpose: To improve history teaching and learning in the nation's elementary and secondary schools. NCHS develops curricula to demonstrate ways to bring history alive, to stimulate gripping classroom discussions, and to engage students in probing analyses of the crucial events and issues that occupied both leaders and ordinary people in the past.

Description: The National Endowment for the Humanities (NEH) established the National Center for History in the Schools following the publication of American Memory in 1987, which had reported major problems in teacher education, history textbooks, and the teaching of history in the schools. The NCHS program is operated under a cooperative agreement between NEH and the University of California, Los Angeles (UCLA).

NCHS has several activities:

- Developing essential curricula in history for grades K-12, and developing for national dissemination and evaluation a collection of exemplary programs for teaching history in the schools.

- Assessing the current status of history instruction and history teachers in the nation's schools.

- Analyzing the credentialing and certification requirements for history teachers throughout the nation, and considering the relative emphasis given to subject matter preparation versus teacher training specialties.

- Analyzing history texts widely used in the schools for their instructional merit and conducting market studies of the influences on textbooks.

In conjunction with the U.S. Department of Education and the NEH, the NCHS will also develop world-class standards for history education. Development of history education standards will contribute to improving history curricula and teaching and will provide a basis for future national assessments.

In 1992, NCHS will publish a book titled Lessons from History, which will present the case for history, discuss what history should be taught, and describe the essential understandings to be gained from U.S. and world history.

Why It Is Promising: The teaching units focus on the turning points in history to help students become aware that choices were made by real human beings, that decisions were the result of specific factors, and that those decisions set in motion a series of historical consequences. Students realize that history is an ongoing process and that the decisions they make today create the conditions of tomorrow's history.

The lessons developed by NCHS enhance students' awareness of historical events and people, and enable students to gain a more intimate understanding of the way things happened. Thus, the concept of history as memorization of facts and dates is replaced with real life stories.

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The History Teaching Alliance

Purpose: To support the creation of collaborative programs designed to improve the content and quality of history education.

Description: The History Teaching Alliance (HTA) was founded in 1984 by the American Historical Association (AHA), the Organization of American Historians (OAH), and the National Council for the Social Studies (NCSS). HTA began with two summer institute pilot projects which attracted a total of 49 participants, at Iowa State University and the University of Florida. Since 1985, more than 1,500 teachers, administrators, professors, and historians involved in 69 separate projects in 30 states have been brought together by HTA. HTA now has 39 local branches. Formerly housed at the offices of the AHA in Washington, D.C., the HTA is now located in the Department of History at the University of Florida.

Each local alliance sponsors a two- to three-week summer institute on a selected topic and encompasses a rigorous academic component, guest presentations by specialists in the chosen historical field, discussions among the participants about the discipline and the practical applications of collaborative materials and themes, and evaluations of the program. Examples of institute themes are "Historical Geography of American Minorities," "Women in European History," and "Biography and Autobiography in the Teaching of Social Studies." Summer institutes are followed up with regular meetings throughout the academic year.

Elementary, middle school, and high school teachers who participate in the alliances earn either in-service training credits or graduate history credits, depending on the design of the project. They also receive stipends for their participation, and usually tuition waivers, materials, and privileges at the participating university.

The activities of HTA and its sponsoring organizations, as well as other items of interest to history teachers, are reported in a quarterly newsletter distributed by HTA.

Why It Is Promising: These alliances bring together teachers, administrators, professors, and public historians in a collaborative atmosphere in an effort to bridge the gap between precollegiate and college-level instruction and to promote content mastery.

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National Council for History Education: History Academy for Ohio Teachers

Purpose: To increase the knowledge and skills of K-12 teachers of U.S. and world history who are participating in the History Academy for Ohio Teachers.

Description: Beginning in summer 1992, 40 teachers from a broad selection of Ohio school districts will participate in a four-week summer institute for intensive training in the central themes and questions in U.S. and world history. The academy will also develop a model curriculum for educating history teachers that can be replicated. During the 1992-93 school year the academy staff will monitor the participating teachers at their schools to help them apply their knowledge and pedagogical skills in the classroom. The academy will also develop collaborative relationships with historians at colleges and universities throughout Ohio to assist the teachers with content and instruction. Participating teachers will receive a $1,000 stipend and their expenses will be paid.

Similar history academies have been established in California, Connecticut, New York, and Utah. The academies are supported by grants from the Fund for the Improvement and Reform of Schools and Teaching of the U.S. Department of Education. Contact the fund at (202) 219-1496 for further information.

Why It Is Promising: The academy will serve *elementary school teachers as well as middle school* and high school teachers and will cover both U.S. *and world history. The model curriculum to be* developed is intended to be replicable by other states. *The staff monitoring during the school year,* and the assistance of university historians, will be *built on the summer institute experience.*

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Tradition and Modernity: A World History Project

Purpose: To improve Michigan teachers' understanding of the connections between Western and non-Western civilizations.

Description: During the first year, historians from the National Faculty, an independent, nonprofit organization with headquarters at Emory University in Atlanta, will make three visits to each of two school districts, each visit lasting three days and involving 40 high school history teachers. The visiting scholars will give presentations emphasizing world history before 1500 and include topics such as world history as a discipline, religions of the world, and ancient empires.

The following summer, the same 40 teachers will attend a three-week residential institute at Grand Valley State University to learn about the concept of the Renaissance as applied to late medieval Europe, the Hindu and Islamic worlds in the late 19th century, China in the 1920s, and 19th century America, followed by examination of the emergence of the scientific world view and the voyages of discovery and European contact with Asia, Africa, and the Americas. The second year, the National Faculty visit the same school districts and emphasize the history of the modern world.

The National Faculty, which administers this program, was founded in 1968 as the National Humanities Faculty. Its members include hundreds of scholars from across the country dedicated to improving the quality of precollegiate instruction. Over the past several years, the National Faculty has joined with educators, administrators, and community leaders in planning ways to improve the content of history courses and the quality of instruction in Michigan schools.

Why It Is Promising: This project promotes coherence in the history curriculum by instructing teachers in the connections between Western and non-Western civilizations. In addition to providing faculty enrichment, the project fosters long-term collaboration between the school districts and university faculty.

Contact: Robert J. Baird
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The Renaissance and the Modern Western World

Purpose: *To instruct humanities teachers on significant aspects of the culture of Renaissance Europe.*

Description: This is a four-week institute on Renaissance Europe for 32 New York State teachers of the humanities. The project seeks to communicate a comprehensive sense of what the Renaissance was by examining its historical context, its art, and the role of women in Renaissance culture. Two themes unify these topics. The first is the relationship of the emergence of "high culture" to its social and historical background, with a concomitant emphasis on the unity of Renaissance culture. The second is the transition from a medieval to a modern world and the relationship of the Renaissance to the latter. Participants visit museums with major collections in medieval and Renaissance art: the Metropolitan Museum of Art, the Frick Museum, and the Cloisters.

The project director is a Renaissance scholar at the State University of New York, College at Old Westbury. Visiting scholars include a Renaissance historian at Columbia University, a specialist in Renaissance humanism from the State University of New York at Albany, a specialist in the Italian Trecento who teaches art history at New York University and the Parsons School of Design, and a professor of history at Brooklyn College with expertise in Venetian humanism and in women in the Renaissance.

Following the institute, a newsletter reports periodically to participants on ways in which colleagues integrate the work of the institute into their teaching. A follow-up weekend session introduces new material on the Renaissance to build on the information participants learned during the summer.

Participants will also discuss their progress in implementing their lesson plans and ways to share these plans with other teachers throughout the state.

The institute is sponsored by the Renaissance Society of America, the principal professional society for those who work in the field of Renaissance studies. Living, study, and meeting space, including library facilities and access to computers, will be provided by Union Theological Seminary, located on the upper west side of Manhattan near Columbia University.

Why It Is Promising: Through a summer institute and follow-up newsletters and weekend meetings, humanities teachers will be able to increase their understanding of the Renaissance as the beginning of modern Western history, be encouraged to share information with colleagues who did not attend the summer institute, and incorporate new material into their classroom instruction.

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Renaissance Society of America
144 East Avenue 9H
Westbury, NY 11590
(516) 876-3182

Classical Civilizations

Purpose: To instruct sixth-grade teachers in the content and use of primary materials for the study of classical Greek and Roman civilizations and to serve as a model for future staff development programs in the school district.

Description: A masterwork study project on classical Greece and Rome for 15 sixth-grade social studies teachers from San Diego has been created to produce a cadre of history teachers versed in the use of primary historical materials, thus serving as a model for future staff development programs in the school district. Once the new California social studies curriculum is implemented in 1992, ancient history will be offered in grade 6.

Plans call for 10 day-long sessions to be held over a two-week period during the summer. The first nine include lectures, discussions, and slide presentations on the history, literature, philosophy, art, and architecture of ancient Greece and Rome. The final session involves a tour of the Getty Museum. Two follow-up workshops will be held during the second year.

The project faculty includes classicists and a philosopher from San Diego State University. A social studies resource specialist and a sixth-grade teacher also serve on the project staff.

This project represents the combined efforts of San Diego city schools and San Diego State University. With an enrollment of over 110,000 students, San Diego city schools is the eighth largest school district in the country. It provides ongoing staff development for its 4,000 teachers and has conducted conferences, workshops, and discussion groups in support of the new California History-Social Science Framework.

Why It Is Promising: This project recognizes changes in the new California social studies curriculum and the need to prepare teachers accordingly. A local school district and state university

are teaming up to develop a model program to train sixth-grade teachers in aspects of ancient history that they will teach under the new curriculum framework.

Contact: Barbara G. Boone
Social Studies Department
San Diego City Schools
4100 Normal Street
San Diego, CA 92103
(619) 293-8018

Sources of Further Information

American Historical Association (AHA)
400 A Street, S.E.
Washington, DC 20003
(202) 544-2422

Contacts: James Gardner, Samuel R. Gammon

Founded in 1884 and chartered by Congress in 1998, the American Historical Association (AHA) is the oldest and largest historical organization in the United States, with more than 13,000 members representing every historical period and geographical specialization. AHA sponsors publications, prizes, and honors for people in the profession. Members include college and university faculty, public historians, independent scholars, librarians, archivists, and primary and secondary school teachers. More than 80 affiliated societies with combined membership exceeding 80,000 individuals represent a variety of specialized interests and include, among others, the Society for History Education, the Committee for History in the Classroom, and the World History Association.

Publications: Perspectives, AHA (newsletter), American Historical Review (journal), Teaching Afro-American History, and Teaching History With Film.

National Center for History in the Schools
University of California
Moore Hall 234
405 Hilgard Avenue
Los Angeles, CA 90024-1521
(213) 825-8388

Contact: Dr. Charlotte Crabtree

A cooperative effort of the National Endowment for the Humanities and the University of California at Los Angeles to promote opportunities for teachers to use primary sources, NCHS has brought together outstanding teachers and scholars to develop curricular units on subjects such as the ancient Near East, China under the Han dynasty, and America in colonial times.

Publications: Annotated Bibliography of Selected Teaching Materials and various history curricular materials, such as "The Golden Age of Greece."

National Council for History Education (NCHE)
26915 Westwood Road
Suite B-2
Westlake, OH 44145-4656
(216) 835-1776

Contact: Elaine Wrisley Reed

Successor organization of the Bradley Commission, NCHE was established in 1990 under the chairmanship of Kenneth T. Jackson of Columbia University to promote the importance of history in school and society.

Publications: History Matters (newsletter), Bradley Commission Report, and Building a History Curriculum.

History Teaching Alliance
Department of History
University of Florida/Gainesville
Gainesville, FL 32611
(904) 392-8188 or 392-0271

Contact: Dr. Anthony J. Beninati, Director

Founded in 1984, HTA sponsors local and regional school-college collaborative projects, bringing teachers and scholars together to improve history instruction in the schools.

Organization of American Historians (OAH)
112 North Bryan
Bloomington, IN 47408-4199
(812) 855-7311 FAX: 812/855-5678

Contact: Arnita A. Jones

Founded in 1907, OAH promotes historical study and research in American history.
Its 12,000 members include college and university faculty and secondary school teachers.

Publications: OAH Newsletter, OAH Magazine of History, and OAH Journal of American History.

Organization of History Teachers (OHT)
University of Chicago Lab School
1362 East 59th Street
Chicago, IL 60637
(312) 702-0588

Contact: Earl Bell

OHT, the only historical organization consisting primarily of K-12 history teachers, was founded in 1987 and has more than 400 members.

Publication: OHT Newsletter.

American Federation of Teachers--Education for Democracy Project
American Federation of Teachers
555 New Jersey Avenue
Washington, DC 20001
(202) 879-4575

Contact: Ruth Wattenberg

This division of the American Federation of Teachers (AFT) supports improving citizenship education and history in American schools.

Publication: American Educator (quarterly magazine).

American Forum for Global Education
45 John Street, Suite 1200
New York, NY 10038
(212) 732-8606
E-Mail: Dialcom, Inc. 41:TCN650 electronic mail

Contact: Andrew F. Smith

The forum prepares American students for responsible national citizenship in a global age by disseminating information and supporting the work of a broad network of individuals and organizations. Founded in 1987, the forum develops and disseminates educational materials for use in schools nationally and internationally.

Publication: Access (monthly).

ERIC Clearinghouse for Social Studies/Social Science Education
Indiana University
Social Studies Development Center
2805 East 10th Street, Suite 120
Bloomington, IN 47405-2373
(812) 855-3838 FAX: 812/855-7901
E-MAIL: MultiLink, BITNET: Henson@IUBACS

Contact: Dr. John J. Patrick, Director

The clearing house collects, abstracts, indexes, and disseminates education information pertaining to the social studies/social sciences fields, including issues associated with the teaching and learning of history, geography, civics, economics, and other subjects in the social studies/social sciences. The organization also provides reference and referral services and on-line searches; produces information analysis products; and disseminates complimentary ERIC products, such as the ERIC Digest, newsletters, and brochures.

Publications: Reports, speeches, curricular materials, newsletters, directories, and monographs.

National Council for the Social Studies (NCSS)
3501 Newark Street, NW
Washington, DC 20016
(202) 966-7840 FAX: (202) 966-2061

Contact: Frances Haley, Director

NCES promotes the teaching of social studies at all levels. it has provided information and resources to social studies educators in all 50 states and more than 60 foreign countries. More than 25,000 members.

Publications: The Social Studies Professional Newsletter (five issues/year), Social Education (seven issues/year), Social Studies and the Young Learner, and Theory and Research in Social Studies.

Society for History Education
California State University Long Beach
1250 Bellflower Boulevard
Long Beach, CA 90840
(213) 985-4503

Contact: Edward A. Gosselin

Founded in 1967, the society publishes a journal on problems and approaches in history instruction.

Chapter 7

Geography

Current Thinking

The Decline of Geography Education

The study of geography was considered an integral part of American education during the 18th and 19th centuries. During the past 50 years, however, geography's status as a distinct and core subject in the school curriculum, however, became buried within the broader framework of the social studies.

The first intensive effort to reform and revive geography instruction came with the post-Sputnik era in 1962 when the National Science Foundation (NSF) funded the High School Geography Project (HSGP) through the Association of American Geographers. HSGP aimed to replace the old rote memorization methods with analysis and inquiry. Unfortunately, few teachers had the geographic training necessary to use the HSGP materials effectively, and the old teaching methods persisted.

Despite further funding attempts by NSF and others to familiarize teachers with HSGP, those innovations failed to restore geography to America's curriculum. By the mid-1970s, only 9 percent of students in grades 7-12 were enrolled in geography courses--an all-time low.

The Resulting Decline of Knowledge

With the release of A Nation at Risk (1983) came a flood of reports revealing how little American students know about geography. A survey of North Carolina college students showed that student knowledge of geography had decreased significantly during the previous 30 years. For example, in 1950, 77.5 percent of students surveyed were able to name the country drained by the Amazon River; in 1983, only 27 percent of students surveyed knew the answer (Brazil).

In a 1988 Gallup survey of the geographic knowledge of adults in nine countries--Britain, Canada, France, Italy, Japan, Mexico, Sweden, the United States, and West Germany--the United States ranked seventh overall, and last among 18-to-24-year-olds. The survey, sponsored by the National Geographic Society, confirmed the concerns for education expressed in A Nation At Risk. The Gallup survey summarized its findings:

> The United States seems to be heading in the wrong direction all by itself. The U.S. is the only country in which the youngest respondents (ages 18 to 24) did not surpass the oldest group tested (ages 55 and over).

In autumn 1989, Rand McNally sponsored a survey of elementary and secondary geography and social studies teachers. About three-quarters of the 852 who responded thought that their colleagues had inadequate training in geography and did not teach it well.

Finally, the National Assessment of Educational Progress (NAEP) assessed the geographic knowledge of 3,000 high school seniors in a nationwide sample of 300 schools during the 1987-88 school year. The results of the survey confirmed a disturbing geographic incompetence among U.S. students. According to the report:

> Most students did not demonstrate an understanding of the basic concepts of physical and cultural geography, and many did not correctly identify the locations of major countries, cities, and landmarks. Further, many of the students did not seem to understand that maps can be used to derive all kinds of information about the world, rather than simply to find places.

Although the NAEP report revealed that few of its survey respondents had taken a high school course in geography, most had been exposed to some geography content in their history and science courses. Students whose American history courses included substantial treatment of geography performed better than others in this assessment.

Guidelines for Reform

In 1984, the year after A Nation at Risk, two leading groups of geographers--the Association of American Geographers (AAG), and the National Council for Geographic Education (NCGE)--formed the Joint Committee on Geographic Education to develop a new framework for the study and teaching of geography. That framework, Guidelines for Geographic Education: Elementary and Secondary Schools, was considered revolutionary, and it added geography to the education reform agenda. Guidelines has also been endorsed by the American Geographical Society, and the National Geographic Society.

Guidelines established five fundamental themes for instruction in geography:

1. **Location:** To know the absolute location of a place is only part of the story. It is also important to know where a place is in relation to other places, and to know the various forms of communication and transportation used to interact with people in other places.

2. **Place:** Geographers describe places by their physical and human characteristics. Physical characteristics include such elements as land forms, bodies of water, climate, soils, natural vegetation, and animal life. Human characteristics of the landscape can be noted in architecture, patterns of livelihood, land use and ownership, town planning, and communication and transportation networks. Languages, as well as religious and political ideologies, also help shape the character of a place. Studied together, the physical and human characteristics of places provide clues to help students understand the nature of places on the earth.

3. **Relationships Within Places (Human and Environment):** In studying interactions between people and their environment, geographers look at all the effects--positive and negative--that occur when people interact with their surroundings. A human act such as damming a river to prevent flooding or to provide irrigation requires consideration of the potential consequences. Studying the consequences of human-environment interactions helps people plan and manage the environment.

4. **Movement (Relationships Between Places):** Students should be able to recognize where resources are located, who needs them, and how they are transported over the earth's surface. The theme of movement helps students understand how they themselves are connected with, and dependent on, other regions, cultures, and people in the world.

5. **Regions:** A basic unit of geographic study is the region, an area on the earth's surface that is defined by certain unifying characteristics. The unifying characteristics may be physical or human. In addition to studying the unifying characteristics of a region, geographers study

how a region changes over time. Using the theme of regions, geographers divide the world into manageable units for study.

Guidelines also proposed a specific geography curricular outline for grades K-12, built on these five themes. Since the publication of Guidelines, broad support for the five themes has been widely reflected in the literature of social studies education. Among secondary-school teachers, support for the five themes was confirmed in a 1988 survey conducted by Richard Farrell and Joseph Cirrincione at the University of Maryland.

Geography Throughout the Curriculum

Teaching geography as a separate subject should be complemented by an equal emphasis on infusing the five geographic themes into other school subjects, such as U.S. history, world history, economics, earth science, and anthropology.

Educators in education increasingly are calling for a combination of geography and history as a major feature of curriculum reform:

- In 1984 the National Council for Social Studies Task Force on Scope and Sequence presented recommendations about curricular reform. Matthew Downey developed a scheme that places history and geography at the center of the social studies curriculum. He noted that "time and space are the fundamental dimensions in which human cultures evolve and human beings interact."

- The Bradley Commission, formed to respond to the inadequacy of history education in elementary and secondary schools, concluded that one of the principal aims of the K-12 curriculum should be to "understand the relationship between geography and history as a matrix of time and place, and as context for events."

- The curriculum framework of the California State Department of Education also highlights geography and history as the most basic subjects of the social studies curriculum.

- Diane Ravitch and Chester Finn of the Educational Excellence Network propose that "the study of history at every grade level should incorporate the study of geography ...[because]...geography literacy enables students to understand how people and places influence each other."

To overcome a legacy of declining interest in geography and to spread knowledge of geography throughout the school curriculum, governments, businesses, and professional organizations have established an array of programs to stimulate student interest in geography. Several kinds of national geography contests have been created, and the idea is spreading. Efforts are being made to improve curricula and to enhance the performance of geography teachers through professional networks and workshops.

Renewing geography education is critical to renewed schools, for to understand *why* something happened, students must understand *where* it happened--and *what* the relationship of that place is to other parts of the world. As air travel and instantaneous communications shrink distances between people, knowing what the world contains and where things are becomes increasingly important for making good decisions, as individuals, and as citizens.

Development of National Standards

In July 1992, the U.S. Department of Education and the National Endowment for the Humanities awarded a grant to the National Council for Geographic Education to develop voluntary national standards for geography education in elementary and secondary schools. The Council is carrying out a 16-month project with the assistance of the Association of American Geographers and the American Geographic Society. The project will build on the National Assessment of Educational Progress Geography Consensus Project, which developed a framework of necessary geography skills and knowledge.

Suggested Reading List

Backler, Alan. 1988. Teaching Geography in American History. Bloomington, IN: ERIC Clearinghouse for Social Studies/Social Science Education: ED 299 222. This ERIC Trends Issues paper recommends that geography core themes be infused into high school U.S. history courses, and suggests an approach for using similar themes to develop ideas in both topics. Examples and a bibliography support these recommendations.

Backler, Alan, and William Sabata. 1990. World Geography and National Security. Columbus: Mershon Center, Ohio State University. Many of the fundamental questions that nations must consider in deciding about their security arise from conditions and principles of geography. This book uses 29 lessons applying basic geographic concepts to illustrate how geography relates to security considerations. Physical, political, and cultural aspects of geography are examined.

Beck, I.L., M.G. McKeown, and E.W. Gromoll. 1989. "Learning from Social Studies Texts" Cognition and Instruction 6 (2):99-158. This article found that the selection of U.S. history content and its presentation in elementary level social studies texts are not oriented toward developing a coherent representation of a chain of events. That is, the text developers have failed to recognize the distinction between presenting facts and explaining information so that the facts can be organized into a coherent whole.

Beck, I.L., M.G. McKeown, G.M. Sinatra, and J. Loxterman. 1991. "Revising Social Studies Texts from a Text-Processing Perspective: Evidence of Improved Comprehensibility" Reading Research Quarterly. 26 (3):251-76, 1991. This study used a cognitive processing perspective to revise fifth-grade social studies texts, to describe those revisions, and to demonstrate their effects empirically. The effects of the revisions demonstrated that a text-processing approach to creating comprehensible text is a viable one. Furthermore, the description of revision goes beyond how revisions have been described in past research by exposing the reasoning underlying the identification of problems and changes made.

Charting a Course: Social Studies for the 21st Century. 1989. A Report of the Curriculum Task Force of the National Commission on Social Studies in the Schools. Washington, DC: National Council for the Social Studies. R4E AUG90. This report by the Curriculum Task Force presents a balance and comprehensive K-12 social studies curriculum program adapted to the needs of people today and suggests direction for the future. Important characteristics of a social studies curriculum are citizens' roles; consistent and cumulative learning; integration of history, geography, and other subject matter; global approach; empowerment; and materials from a variety of media.

Council of Chief State School Officers (CCSSO). 1988. Geography Education and the States: A Report on a 1988 Geography Education Survey of State Education Agencies. Washington, DC: CCSSO. This survey of the nation's state education agencies gathered data on requirements, integration, state personnel, teacher training, and suggestions for improvement in geography education in elementary and secondary schools. The high response rate and comments indicate strong interest in geographic instruction.

Fromboluti, Carol Sue. 1990. Helping Your Child Learn Geography. Washington, DC: U.S. Department of Education, ED 313 316. This handbook provides practical learning activities for parents to use to teach geography to children under age 10, following the themes of physical location, physical and human characteristics of places, relationships, patterns of movement, and formation and

change of regions. The handbook contains learning activities, a glossary, sources of free or inexpensive materials, and a list of books.

Gallup Poll. 1988. Princeton, NJ: Geography: An International Gallup Survey. Gallup Organization. This poll assesses the extent of basic geographic literacy among adults 18 and over in the United States as well as in eight "comparison countries." The study also explores the degree to which Americans think knowledge of geography is important and their awareness of the influence of geography on a variety of events. It concludes that despite educational methods, technological advancements in global communications, and increased relevance of global events, there is considerable evidence that America's geographic literacy is getting worse rather than better.

Geographic Education National Implementation Project (GENIP). 1987. K-6 Geography: Themes, Key Ideas, and Learning Opportunities. Macomb, IL: National Council for Geographic Education, ED 288 807. Based on the themes, geographic concepts, and suggested outcomes contained in Guidelines for Geographic Education: Elementary and Secondary Schools, this implementation guide gives resources for preparing daily lesson plans, curriculum guidelines, and resource materials.

Goodall, Kenneth, ed. 1991. Geography in U.S. History: A Teacher's Guide. Bloomington, IN: Agency for Instructional Technology. This guide provides materials to help teachers infuse the teaching of geographic concepts and skills into high school American history courses. Each of the 10 programs of which it consists uses one of the five fundamental geographic themes to examine a significant event in U.S. history.

Haas, Mary E. 1989. Teaching Geography in the Elementary School. Bloomington, IN: ERIC Clearinghouse for Social Studies/Social Science Education, August, 1989. ERIC Digest EDO-SO-89-6. This report discusses the need for elementary school geography education. It recommends teaching geography in elementary school, conducting teacher training workshops, and using the five geographic themes to focus study at all grade levels. Teaching strategies, both common and suggested, also are discussed.

Hill, A. David. 1989. "Rediscovering Geography." NASSP Bulletin 73 (December): 1-8. EJ 400 529. Based on the 1984 instructional Guidelines for Geographic Education: Elementary and Secondary Schools (part of the reintroduction of geography into the secondary school curriculum), this article stresses the five interrelated themes that serve to form a sound conceptual framework in which to teach geography.

Joint Committee on Geographic Education. 1984. Guidelines for Geographic Education. Washington, DC: Association of American Geographers and the National Council for Geographic Education, ED 252 453. These guidelines suggest the major changes needed to counteract the prevailing illiteracy in geography among U.S. citizens. Five central themes, targeted skills and knowledge, and instructional approaches in geographic education are discussed. An approach to implementing a geography curriculum in secondary school is suggested. The guidelines have been the basic blueprint for education reform efforts in geography.

Ludwig, Gail S., et al. 1991. Directions in Geography: A Guide for Teachers. Washington, DC: National Geographic Society. This handbook helps teachers stimulate ignite interest in geography. It includes ways to integrate geography's five themes into the classroom, lesson plans with reproducible black-line maps, annotated bibliography of teaching resources, plus information on the National Geographic Society's activities in geography education.

National Assessment of Educational Progress. 1990. The Geography Learning of High School Seniors. Princeton, NJ: Educational Testing Service. ED 313 317. This report presents results of the 1988 National Assessment of Educational Progress (NAEP) survey of high school seniors, which indicate that students are generally deficient in geographic knowledge and skills. Additional materials include reactions of researchers and educators, press release materials, and statements from officials of the Office of Educational Research and Improvement, the NAEP, and the National Geographic Society.

National Geographic - GTV. 1992. Washington, DC: National Geographic Society in collaboration with Lucasfilm Ltd. and funded in part by the California Department of Education. GTV is an interactive multimedia product for grades 5-12 that runs on a videodisc player/computer. Two titles are currently available: "GTV: A Geographic Perspective on American History" (a supplement to classroom history textbooks) and "GTV: Planetary Manager" (an exploration of the connections between environment, science, and society).

Natoli, Salvatore J., ed. 1988. Strengthening Geography in the Social Studies. Washington, DC: National Council for the Social Studies. ED 296 946 This bulletin demonstrates the power of geographical content, including the concepts and skills of geography as they relate to various components of the social studies curriculum. Subjects covered include the goal of modern geographic education, curricular issues facing educators, the problem of adequate preparation of teachers of geography, the fundamental skills of geography, ways to include more geography in the curriculum (including extensive teacher resources), and the results of a study of how a national sample of social studies teachers viewed the five fundamental themes of geography outlined in Guidelines for Geographic Education.

Remy, Richard C., et al. 1987. Teaching National Security: Instructional Strategies and Lessons for High School Courses in History, Government, Geography, Economics. Bloomington, IN: ERIC Clearinghouse for Social Studies/Social Science Education and the Mershon Center, Ohio State University. The instructional techniques illustrated in this book present a method of infusing national security issues into the principal social studies courses. The instructional strategies employed include concept learning, decision making, case study, analysis of primary sources, role playing, mapping exercises, interpretation of data in tables, charts and graphs, and issue analysis.

Salter, Christopher L. 1990. Missing the Magic Carpet: The Real Significance of Geographic Ignorance. Princeton, NJ: Education Testing Service. This booklet looks at National Assessment of Educational Progress (NAEP) findings and suggest some specific actions that parents, teachers, and administrators can take to improve geography learning in America's schools. Salter shares his enthusiasm and his sense of adventure about the subject, as well as his convictions about the potential impact of solid geographic knowledge on students' perceptions of the world.

Salter, Christopher L., and C. Riggs-Salter. 1988. "Five Themes in Geography and the Primary-Grade Teacher." Social Studies and the Young Learner 1 (November-December): 10-13, EJ 386 326. This article provides 10 class activities for primary-grade students on the five themes of geography.

Sensenbaugh, Roger. 1989. Writing Across the Social Studies Curriculum. Bloomington, IN: ERIC Clearinghouse on Reading and Communications and for Social Studies/Social Science Education, 1989. This book of lesson plans, compiled from resources in the ERIC data base, focuses on writing activities for social studies classes in junior high and high school. The book has an introductory essay by John J. Patrick and then provides lessons on world history, U.S. history,

general topics, and newspapers, as well as a user's guide, an activities chart, resource sheets, and an annotated bibliography of related resources in the ERIC data base.

Stoltman, Joseph P. 1990. Geography Education for Citizenship. Bloomington, IN: ERIC Clearinghouse for Social Studies/Social Science Education. ED 322 081. Stoltman examines the ways that geography education has contributed to citizenship education as the two have developed during this century and argues that students who study geography develop competence in three areas: (1) literacy in the subject matter of geography; (2) the ability to apply geography and its fundamental themes, skills, and perspectives to a wide range of political, economic, social, and environmental issues; and (3) knowledge to participate actively as citizens in their local communities, the nation, and the world.

_____. 1991a. "Research on Geography Teaching." Handbook of Research on Social Studies Teaching and Learning. A project of the National Council for the Social Studies, New York: Macmillan. This article summarizes the research in the field of geography teaching and learning in four categories: (1) topics investigated, (2) methodology, (3) testing theories of learning, and (4) replication. It also provides recommendations for future research in four categories: (1) learning outcomes, (2) new technology, (3) new initiatives, and (4) new approaches to teaching.

_____. 1991b. Teaching Geography at School and Home. Bloomington, IN: ERIC Clearinghouse for Social Studies/Social Science Education. ERIC Digest EDO-SO-91-5. This digest discusses what students should learn about geography, what schools should do to improve the geography learning of students, and what parents can do at home to improve the geography learning of children.

Examples of Promising Projects

World Wise Schools

Purpose: To promote the study of geography, to stimulate interest in the world's cultures, and to demonstrate the value of volunteer service and citizenship.

Description: World Wise Schools is a multifaceted and professionally evaluated program of geographic education offered to students in grades 3-12. It was started by the Peace Corps in September 1989 to spread among American students an understanding of the world gained by volunteers while working overseas. During the 1990-91 academic year, 2,026 teachers were matched with an equal number of active Peace Corps volunteers serving in 73 countries.

Interested teachers contact the Office of World Wise Schools to have their classes assigned to a volunteer who is serving overseas. Once matched with a class, the Peace Corps volunteer and the students begin exchanging letters. The teacher may then receive resource packets, including 15-minute videos of life in particular countries with an accompanying teacher's guide. Typically, students send the volunteer pictures and "care" packages. Volunteers may send the students artifacts from their host country. When the volunteer returns to the United States, he or she often visits the class in person.

Teachers may also ask to be linked with a returned Peace Corps volunteer, who will come to the classroom as a guest speaker. Although this program is new, about 200 returned volunteers have indicated an interest in visiting schools and some visits have already taken place.

The World Wise School program has signed 14 cooperative agreements with governors and state education leaders who certify and promote the World Wise School program in these states. This kind of relationship allows the program to take fuller advantage of resources within a state. For example, World Wise Schools is working with the Oklahoma Foundation for Excellence, which is striving to have at least one classroom-volunteer match in each of the state's 500 high schools.

Partnerships with public service organizations are forming. For example, the Cobb County Chamber of Commerce in Georgia became the first chamber of commerce in the nation to enter into a partnership with the Peace Corps. The chamber will buy and distribute World Wise Schools materials to 94 schools in the Cobb County and nearby Marietta school systems.

The program is beginning to pursue partnerships with companies and other organizations in the private sector.

Why It Is Promising: Partnerships with the Peace Corps to promote geographic education can take advantage of the unique stature, experience, resources, and materials the Peace Corps has developed over the years. Costs to participating schools are minimal.

Evaluation: This year a teacher survey was sent to all 2,026 teachers who had participated in World Wise Schools in 1990-91; 632 responded. Although the response rate was low, World Wise Schools reported that 98 percent of the respondents said that they would recommend the program to a colleague.

Costs: The Peace Corps bears most of the costs of World Wise Schools. Schools receive the videos, teacher's guides, newsletters, and volunteer speakers free of charge. The program reimburses the Peace Corps volunteer for postage; schools pay for postage when they send letters and "care" packages to the volunteer. When a returned volunteer visits a classroom, the volunteer pays for his or her own travel.

The Office of World Wise Schools operates with an annual budget of about $500,000,--less than 1 percent of the overall Peace Corps budget. A staff of about seven is supplemented with educational consultants, as needed.

Contact: Bruce MacDonald
Program Development Specialist
Office of World Wise Schools
1990 K Street NW
Washington, DC 20526
1-800-424-8580, ext. 2283
(202) 606-3294

The National Geography Bee

Purpose: To spark young people's interest in geography through a fast-paced, challenging competition on world geography.

Description: The National Geography Bee is an annual nationwide competition for students in grades 4-8 to test their knowledge of the world. Contest questions, composed by selected geography teachers and reviewed by academic geographers, cover world geography in all its aspects. Nearly 5 million students participated in the 1991-92 Geography Bee.

The three-stage competition begins in the winter at the school level. In late fall the National Geographic Society (NGS) sends a package of contest materials, to each registered school. The winner of the school competition takes a written qualifying examination. As many as 100 of the top-scoring students are eligible to compete at the state level. Each state and territory holds a Geography Bee for these first-round winners in the spring. Transportation and accommodations are the responsibility of their contestants and their schools.

State and territory winners compete in the national competition, a two-day event held in May at NGS headquarters in Washington, D.C. The 57 national finalists represent the 50 states, five U.S. territories, the District of Columbia, and the Department of Defense schools. Contestants and their teacher escorts travel as guests of the National Geography Bee.

The national champion receives a $25,000 college scholarship. Second-and third-place winners receive $15,000 and $10,000 scholarships, respectively. Each of the 10 finalists takes home $500, plus Amtrak tickets for a family of four. The schools of the top three state winners and of the top 10 national winners receive a selection of National Geographic educational materials.

School principals interested in the Geography Bee must register with the NGS in the fall of the year. Registration is free, and every registered school receives a certificate and a National Geographic map.

Why It Is Promising: The contest is entertaining and rigorous, and attracts the participation of millions of children. The number of schools participating in the bee increased from 25,000 in 1989 to 43,000 in 1992. While the schools' financial investment is minimal, the program inspires serious interest in geography.

Evaluation: None.

Costs: The National Geographic Society and Amtrak funded the 1991-92 Geography Bee.

Contact: Mary Lee Elden
Director, National Geography Bee
National Geographic Society
Washington, DC 20036
(202) 828-6659

ARGUS: Activities and Readings on the Geography of the United States

Purpose: To develop innovative secondary school materials on the geography of the United States. These materials will be used by American students and will be exchanged for similar materials developed in parallel projects in a number of other countries.

Description: ARGUS is designed to foster a comprehensive approach to geography instruction by integrating readings with hands-on activities. The materials have four components:

1. A brief, concise introductory text;

2. A set of related readings that can be updated, including selections from literature, landmark reports, articles, and other timely pieces;

3. A book of activities that provide problem-solving experience using concepts and issues introduced in the text and readings; and

4. A teacher's guide.

The materials are organized around important topics of today, such as population trends, environmental problems, and economic issues. They can be used selectively to enrich a modern U.S. history course, or they can stand alone as a one-semester course in U.S. geography. The possibilities for combining the text, activities, and readings in various ways also enable teachers to gear the materials to a number of other courses, as well as to the differing reading levels of students in grades 9-12.

The project has been developed as a joint effort between academic geographers and classroom teachers. Geography teachers from the state geographic alliances are involved in developing the materials and also in training other teachers in their use. The text, activities, and readings are being prepared for classroom testing in the fall of 1992. All interested teachers are invited to participate in this phase.

ARGUS is part of a larger effort to develop curriculum exchanges with several countries. A parallel project is in progress in Russia. The U.S. and Russian materials will be translated, exchanged, and made available to students and teachers in each country. The work of both teams is closely coordinated to ensure that the products are similar in topic areas and format. The common issues faced globally will be impressed upon American and Russian students alike.

Why It Is Promising: ARGUS is developing innovative instructional materials that involve students in active learning. The activities will enable students to use geographic skills and tools to investigate timely topics in U.S. geography. The readings will provide fresh perspectives on topics covered in the text and activities.

The growing demand for strong geography components in U.S. history courses will make the materials an attractive supplement to such courses, and the materials are well suited for semester-long courses in U.S. geography. The United States is one of the few nations in which high school students are not routinely offered courses in the geography of their own country. This project will provide materials that will enable school districts to consider introducing courses in U.S. geography. In Russia these materials will be used in world geography classes to meet the strong demand for accurate information about the U.S.

The comparable materials on the geography of Russia that are being designed for use in global studies courses in the U.S. will meet the need for up-to-date materials on Russia, and will improve understanding of common issues and problems in both countries.

Evaluation: An external evaluator is monitoring the project and will prepare a report in three years.

Costs: Primary support comes from a $519,000 grant from the National Science Foundation. ARGUS is also funded by the Association of American Geographers (AAG), state geographic alliances, and the school systems of participating classroom teachers. These funds cover the cost of operations only within the U.S. The Russian portion of the project is funded independently. The project is administered by the AAG.

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Geographic Education National Implementation Project (GENIP)

Purpose: To provide a framework through which professional geography organizations can promote geographic education.

Description: The Geographic Education National Implementation Project (GENIP) was formed to implement the guidelines for geography education published in the handbook, Guidelines for Geographic Education, produced by the Association of American Geographers (AAG) and the National Council for Geographic Education (NCGE), with assistance from the American Geographical

Society (AGS) and the National Geographic Society (NGS). Before the handbook was published, these major geographic organizations had pursued separate paths in promoting the study of geography. Through the handbook, the organizations coordinated their efforts to develop an instructional framework that would assist in improving the teaching of geography.

GENIP's work is directed by a steering committee of representatives from the sponsoring organizations. An important part of GENIP's ongoing mission to implement Guidelines has been the production and dissemination of two additional publications: K-6 Geography: Themes, Key Ideas, and Learning Opportunities and 7-12 Geography: Themes, Key Ideas and Learning Opportunities. These publications apply the framework proposed in Guidelines to geography instruction at each grade level.

GENIP has produced two other publications for geography teachers and curriculum planners: Text Assessments in Geography: Interpretive Analyses of Standard Geography Textbooks, 7-12; and Earth at Risk: Instructional Materials on Sustainable Development and Management of the Environment (Resource Guide for Teachers). In 1985 the National Geographic Society produced a map/poster for GENIP entitled Maps, The Landscape, and Fundamental Themes in Geography. Since its publication, about seven million copies have been distributed. In addition to these publications, GENIP also produces a triennial newsletter providing information and discussing issues relative to geographic education.

GENIP's mission also includes working to:

- o Increase the visibility of geography in the curriculum;
- o Establish communication networks of teachers, curricular specialists, teacher trainers, and professional geographers;
- o Improve the expertise of teachers through improved pre-service and in-service programs and summer institutes;
- o Influence the standards for the certification of teachers of geography; and
- o Aid in the improvement of K-12 curriculum materials.

Evaluation: There has been no formal evaluation of GENIP.

Costs: Support for GENIP comes from its four sponsoring professional societies.

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National Geography Olympiad

Purpose: To stimulate students' interest in geography by participating in a national competition.

Description: The National Geography Olympiad has been held each spring for the past seven years; in 1990-91, 1,138 schools nationwide took part in the Geography Olympiad. The contest is sponsored by the National Council for Geographic Education (NCGE), a national non-profit educational organization. The tests for the Olympiad are developed by members of NCGE.

The Geography Olympiad is not a traditional meet held in a single city. Rather, it is based on a test given to all interested students at a participating school. The school grades the tests, and the top 10 scores--which constitute the school's team score--are sent to the Olympiad office in Hauppauge, New York. There, results from schools all over the country are tabulated and checked, and the top-scoring schools are publicized in the news. All participating schools receive awards for their own top scorers. The schools also receive a report of the national results, which shows each school's rank.

The Olympiad actually consists of contests in three divisions: one for grades 5-6, one for grades 7-8, and one for grades 10-12. The grade 5-6 test consists of 40 questions; the tests for grades 7-9 and 10-12 consist of 50 questions. All tests last 35 minutes and are multiple choice. All tests include questions that are skill-related--dealing with direction, distance, and interpretation of maps or graphs--and questions on physical geography and human factors such as health. Although the tests contain some difficult questions, most are suitable for the majority of students.

Why It Is Promising: For a minimal entry fee and with no need to travel to a meet, entire classes may prepare for and participate in an exciting nationwide competition. Furthermore, the program is self-supporting.

Evaluation: No formal evaluation has been conducted.

Costs: A fee of $40 entitles a school to register one team. If the school competes in more than one division, the fee for each additional team is $20. For each team registered, one medal for the top-scoring student and 10 certificates for each team member are provided. The program also gives individual and team awards to national winners in each division.

Revenue from the schools pays the salaries of Olympiad staff, most of whom are also teachers. Revenue from all the Olympiads covers all program costs, including materials and mailing costs.

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Gridiron Geography

Purpose: To teach children U.S. geography through a coast-to-coast survey of National Football League (NFL) teams, cities, and games.

Description: Gridiron Geography is a geography curriculum containing numerous lessons, worksheets, quizzes, and maps highlighting the major NFL football teams, players, and hometowns. The program began in the early 1980s in Kansas City, where the Kansas City Times entered into a partnership with the Kansas City Chiefs. The idea subsequently spread to Philadelphia, Denver, and Indianapolis, through their local newspapers.

The Indianapolis News has operated Gridiron Geography for six years. In 1990-91, 289 teachers in 159 schools had more than 8,000 students in grades 4-8 in the Gridiron Geography curriculum.

In Gridiron Geography students learn U.S. geography while they follow the Indianapolis Colts through the NFL cities and regions of their opponents. The Association of American Geographers, the Geography Educators Network of Indiana, and the NFL endorse the program.

Every Monday afternoon in the Indianapolis News and Tuesday morning in the Indianapolis Star during the regular NFL season, the sports section focuses on the city or region of the Colts' next opponent.

Features of the program include the following:

- Both participating newspapers publish weekly articles with geographic highlights, photos, and maps of the area of the Colts' next opponent.
- Colts players visit the classrooms. Each classroom is entitled to one visit from a Colts player during the season.
- "Conquer These Questions" is a contest challenging students to test their geographic knowledge. It gives them a chance to win one of about 20 prizes awarded each week.
- Each participating teacher receives a packet of supplementary materials containing a large color map of the United States, map exercises, activity sheets corresponding to each newspaper feature, ideas for group projects, Colts souvenirs, and NFL schedules.
- The Star or the News is delivered weekly to the school each Monday or Tuesday at half the home delivery price--12.5 cents per copy. Interested teachers have their students pay for this delivery.
- The curriculum is divided into three five-week units, corresponding to the season's game schedule. A teacher may subscribe to one, two, or all three units.
- Fifth- and sixth-grade classes that participate in all three units have a chance to win 30 tickets to one of the Colts games. To enter, the class must complete and send in a group geography project. The projects are judged by students in the College of Education at Butler University.

The curriculum, compiled by the Department of Geography at Indiana University, Purdue University at Indianapolis, and public school teachers, complies fully with state guidelines and with guidelines prepared by the National Council for Geographic Education and the Association of American Geographers.

Why It Is Promising: Gridiron Geography is a powerful partnership joining the city newspaper, local colleges, the public school system, and a football team in sparking children's interest in the

study of geography. Not only could this program be adopted in other NFL cities, but also a parallel curriculum could be created for baseball, basketball, or hockey.

Evaluation: There has been no formal evaluation of this program.

Costs: The Indianapolis News funds most aspects of Gridiron Geography in Indianapolis. In 1990-91, the newspaper spent approximately $14,700 to cover staff and materials--the binders for teachers that contain all the worksheets, maps, and guidelines for the 289 teachers involved. The Colts donated the time of their players to visit the schools, as well as tickets, souvenir pennants, and football picture cards of Colts players. Curriculum development and contest judging were performed by educators and college students on a voluntary basis.

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The Indianapolis News
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The National Geographic Society's Geography Education Program

The National Geographic Society works with educators to help improve the quality of geography education through three programs: (a) a network of university-based alliances (Geographic Alliance Network); (b) several institutes for teachers (Summer Geography Instructional Leadership, and Educational Technology Leadership); and (c) a series of widely attended one-day workshops (Teaching Geography Project).

A. The Geographic Alliance Network

Purpose: To establish state resource centers from which teachers and college faculty spearhead state and local efforts to improve the quality of geography education.

Description: The Geography Education Program is built upon a network of state and territorial geographic alliances. A geographic alliance is a university-based organization that brings together the content expertise of academic geographers and the classroom experience of elementary and secondary teachers.

The alliances are led by coordinators who manage the programs and serve as key sources of information about state activities. A coordinator is usually a professor of geography at a university where the alliance is housed. In a few cases the coordinator is either a state department of education curriculum official or a classroom teacher.

A primary activity of the alliances is conducting two- and three-week summer geography institutes. They also offer one- and two-day and after-school geography workshops for teachers across their states. In addition, alliances develop classroom materials keyed to the local curriculum, coordinate geography awareness activities, and provide a focus for curriculum advancement. Conferences,

committee meetings, fund-raising, and technical assistance to teachers developing geography curricula are among the other activities of the alliances.

Why It Is Promising: Alliances are now active in 46 states and Puerto Rico. Program activities reach all 50 states, the District of Columbia, and Canada, and are having an effect on curriculum throughout the country. For example, in Kentucky social studies requirements have been revised to emphasize geography in grades 4-6. Kentucky developed new teachers' resource guides for grades 4-6 and are working with Kentucky Educational Television to develop five 15-minute programs for classroom use with the guides. The University of Colorado at Boulder now requires that all students entering the College of Arts and Sciences complete a full year of high school geography. The University of Tennessee now requires a year of either world geography or world history. Both requirements are the direct results of the work of the alliances.

Evaluation: Within each alliance, internal evaluations of institutes and workshops take place as resources permit.

Costs: Alliances are supported by a combination of funds from the National Geographic Society Education Foundation, state governments, and other public and private sources. The Education Foundation funds alliances for three years once they are formally designated as members of the network. Alliances join the network through a two-step competitive process. The foundation provides matching grants of up to $50,000 annually and requires alliances to secure matching funds from their state governments or private sources.

The Foundation helps the alliances with fund raising. Representatives from the Foundation have helped alliance leaders obtain matching funds from their state governments and private sources.

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B. National Geographic Society Institutes

The National Geographic Society sponsors three institutes each year:

1. The Summer Geography Institute serves as the model for institutes that geographic alliances conduct during their first three-year cycle of funding.

2. The Instructional Leadership Institute includes advanced geography content and leadership training.

3. The Educational Technology Leadership Institute focuses on helping teachers learn how to use new educational technology for instruction in geography.

Graduates of the Society's institutes train others through in-service geography workshops, creating a multiplier effect. During the school year after graduation from an institute, each participant must

conduct at least three geography workshops. This strategy extends the effects of summer institutes to thousands of teachers in each alliance.

1. The Summer Geography Institute (SGI)

Purpose: To enhance teacher competence in geographic themes and concepts, and to prepare teachers to lead in-service workshops for other educators in their districts through their geographic alliances.

Description: The SGI brings together about 65 elementary and secondary educators for an intensive four weeks of classes, assignments, projects, and field experiences. Held annually at National Geographic Society headquarters in Washington, D.C., participants are chosen to improve their teaching of geography, to expand the role of geography in their schools and districts, and to bring about curricular reform.

Selected on a competitive basis, SGI participants attend lectures and discussions, create new teaching materials, and participate in group sessions aimed at developing classroom teaching strategies. Participants also present a simulated workshop based on a proven model to use in future in-service workshop sessions. Two full-day Saturday field trips, together with a four-day extensive field study are required, as are several written assignments and some required readings.

Why It Is Promising: The training builds a strong professional network of geography educators ready to assume active roles in their respective geography alliances. Following the SGI, many graduates act as faculty for their geographic alliance's summer geography institute. The exchange of ideas and strategies for classroom implementation is designed to improve the quality of instruction thousands of children will receive.

2. The Instructional Leadership Institute (ILI)

Purpose: To introduce participants to new and exciting geography content, to further develop participants' skills as facilitators of in-service training, and to enhance leadership skills within the alliance system.

Description: Begun in 1989, the ILI's primary focus is on intensive instruction in geography content and the development of strong leadership skills. All participants must produce a final written project incorporating the various skills acquired in the institute. ILI participants are selected by their alliance coordinators and must be graduates of their alliance's summer geography institute. Each year the ILI is attended by approximately 30 alliance teachers. The program which lasts for three weeks is held at the Society's headquarters in Washington, D.C.

Why It Is Promising: Graduates assume leadership roles in their alliances and effectively communicate the goals of the National Geographic Society's Geography Education Program to education administrators at the district and state levels.

3. The Educational Technology Leadership Institute (ETLI)

Purpose: To train alliance teachers in the many innovative methods of using high-tech hardware and software to improve geography education.

Description: Cosponsored with IBM, ETLI provides two weeks of training for approximately 30 educators at IBM's Atlanta training center. The goals of ETLI are to provide teachers with hardware and software for use in expanding and enriching the teaching of geography; to show participants innovative ways of compiling geography lessons that integrate various types of technology; to prepare teachers to serve as teacher-consultants in educational technology at the local and state levels; and to prepare participants to conduct effective and stimulating in-service workshops on the use of educational technology in teaching geography.

Why It Is Promising: Participants are selected by their geographic alliance coordinator based on previous attendance at any National Geographic Society-sponsored geography institute, active membership in the state's geographic alliance, and demonstrated aptitude for passing along knowledge through sound in-service presentations. Each graduate is required to give a minimum of three full-day educational technology in-service workshops in his or her state using the $15,000 worth of hardware and software they receive from the training.

Evaluation: At the conclusion of each institute, participants complete an extensive evaluation form; faculty and staff use the form to plan the next summer's program.

Costs: The National Geographic Society provides airfare, ground transportation, a daily food stipend, and double-occupancy dormitory-style housing for all teachers and faculty involved in all three institutes--The Summer Geography Institute, Instructional Leadership Institute, and the Educational Technology Institute. Faculty are paid a salary. Participants receive an honorarium at the end of each institute. Optional graduate credit is usually offered at the participants' expense.

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C. Teaching Geography Project: Workshops for Teachers

Purpose: To provide materials and services to teachers interested in increasing their competence in teaching geography.

Description: The Teaching Geography Project aims to improve the geography skills and knowledge of teachers of grades 4–12 through practically oriented one-day workshops. Since the workshops began in April 1988, more than 7,000 teachers have attended.

The Teaching Geography Project sponsors 60 to 70 such workshops each year, in 40 states; thus a state may hold one, two, or three such workshops per year. At each workshop, 20 to 50 teachers are taught by other experienced geography teachers from the National Geographic Society's alliance network. Workshop teachers are exemplary graduates of National Geographic-sponsored summer institutes.

The objectives of the workshops are to introduce fundamental geographic themes, to present useful, proven teaching strategies, and to share information about ongoing curricular resources. Each participant receives a copy of Directions in Geography, a teacher's handbook prepared by the National Geographic Society, which contains lesson plans, resource information, and activities for

teaching geography across the whole curriculum. Handouts include maps, atlases, and reference materials.

At a typical workshop roughly two hours are dedicated to presentations on basic geographic concepts and skills, three to four hours are devoted to sharing teaching strategies, and another hour is reserved for information about support services and other resources. Participants are encouraged to join their state geographic alliances and to become active in curricular reform. Each participant is placed on the mailing list of the Geography Education Program's Update newsletter.

To participate in a workshop, the teacher contacts the National Diffusion Network (NDN) state facilitator in his or her state. The NDN is a project of the U.S. Department of Education, which makes exemplary educational programs available to schools nationwide.

Why It Is Promising: These workshops provide an immediate gateway to the National Geographic Society's active geographic alliance network. The project provides materials, in-service instruction, teaching strategies, and skills.

Evaluation: At the end of each workshop, each teacher completes a one-page evaluation containing 10 to 15 items. The presenters also fill out an evaluation. The staff of the Geography Education Program read evaluations and share them with those involved at the state level. Results are used to plan future workshops.

Costs: The Teaching Geography Project is funded partly by National Geographic and the National Diffusion Network, and partly by fees from participating teachers and their school districts. The project bills the workshops $45 per participant, which covers the cost of the handbook and other materials. Usually the teachers' school districts pay this fee, although in some cases the district and the teacher share the cost.

The project pays workshop leaders $325 to present a one-leader workshop; if a team of two leads a workshop, each leader is paid $225. The project also pays leaders' travel and meal expenses.

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Eaglecrest's World Geography/Environmental Science Program

Purpose: To use geography as the bridge between the social and physical sciences and as a medium for developing higher-level thinking skills.

Description: In the World Geography/Environmental Science Program at Eaglecrest, Colorado, 9th grade students examine global environmental issues as the basis for studies across several disciplines. The geographic and scientific aspects of issues such as deforestation, climatic change, ozone depletion, acid precipitation, waste disposal, and desertification are studied in a highly participatory

manner: teachers pose problems and questions that the students think through aloud and in written papers.

There is no single textbook. Teachers use a variety of resources, including newspapers, current news magazines, and video materials. The program demands a high level of cooperation with other students and much critical thinking. To accommodate the exercises, writings, and discussions, some classes are scheduled in two- and four-hour blocks.

The program was pioneered by two teachers at Eaglecrest High School through intensive collaboration with other geography educators in Colorado, including the coordinator of the state geographic alliance, and the social studies specialist from the Colorado Department of Education. Although neither the district nor the state requires geography to be taught, every 9th grader at Eaglecrest must attend this program.

Why It Is Promising: Eaglecrest's Word Geography/Environmental Science Program helps students develop their knowledge of scientific and geographic subject matter along with important relevant global issues. The inquiry-oriented approach to the material helps students develop their critical faculties. The program's development serves as a model of successful collaboration between the state government, a university-based state geographic alliance, a school, and classroom teachers.

Evaluation: Participating teachers evaluate the program informally through weekly meetings where they plan future lessons, share ideas and materials, and revise the curriculum. They discuss what does and does not work with particular groups and situations. Teachers often take risks and experiment with lessons.

To assess students' knowledge, the teachers use both traditional and alternative methods. In one type of assessment, each student develops a "news magazine" that describes each issue as it affects a selected country. This becomes the student's portfolio, which is assessed by teachers when the course is completed. Final exams not only evaluate content but assess skills such as atlas use, writing, and synthesis of information.

Costs: The school received a $1,000 gift certificate from the National Geographic Society to purchase maps for every teacher in the school. The teachers and others who helped develop the curriculum were supported by their respective institutions.

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Sources of Further Information

American Geographical Society (AGS)
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Contact: Mary Lynne Bird, Executive Director

The American Geographical Society (AGS) is an independent, nonprofit corporation that serves as a liaison between geographers and the business, public policy, and diplomatic communities. AGS has a historic link to the business community and channels most of its educational activities into programs that emphasize geography as it relates to economics and commerce. AGS sponsors expeditions, presents lectures, conferences and symposia, awards honors to scholars and explorers, conducts research on a wide range of geographical topics, and has amassed the largest geographical research library in the Western Hemisphere. It publishes the Geographical Review (quarterly periodical), and FOCUS (quarterly magazine), and a newsletter. In partnership with Junior Achievement in New York City, AGS brings a geographic perspective to business and economics classes. AGS plans to expand the program nationally.

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Contact: Dr. Osa Brand

Founded in 1904, the Association of American Geographers (AAG) serves the community of professional geographers and sponsors projects to improve precollegiate geography education. AAG and the American Express Company jointly sponsor an annual geography competition that encourages students in grades 7-12 to carry out independent research projects. Winners receive more than $100,000 in travel awards or American Express traveler's cards.

Commission of Geographical Education
International Geographical Union
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Contact: Hartwig Haubrich

Founded in 1952, the Commission for Geographic Education has 277 members and is a Commission of the International Geographic Union. It promotes improvement in both teaching and learning of

geography at all levels of education. It also helps nations develop a sound system of geographical education, disseminates information regarding curriculum development in geography, and provides a center for international funding of research projects.

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Collects, abstracts, indexes, and disseminates education information pertaining to the social studies/social sciences fields, including issues about the teaching and learning of history, geography, civics, economics, and other subjects in the social studies/social sciences; provides reference and referral services and on-line searches; produces information analysis products; disseminates complimentary ERIC products, such as digests, newsletters, and brochures. It is sponsored by the U.S. Department of Education, Office of Educational Research and Improvement.

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Founded in 1915, the National Council for Geographic Education (NCGE) has more than 3,200 members, including geography educators and teachers at all levels of education. It encourages the training of teachers in geographic concepts, practices, and teaching methods and improves the teaching and learning of geography in schools as well as among adult groups outside schools. It publishes the Journal of Geography and the newsletter Perspective. Pathways in Geography, a series of publications for teachers, students, teacher trainers and curriculum planners, was launched in 1990. The first in the series was on geography in the K-12 curriculum. A publication focusing on the Americas for teachers and students is planned for 1992 to coincide with the Columbus Quincentennary.

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The Education Foundation of the National Geographic Society seeks to revitalize the teaching and learning of geography in the nation's K-12 classrooms. Through a wide range of activities, the society aims to reestablish geography as a vital component of a well-rounded education. The Education Foundation was established in January 1988 to provide a permanent and expanding source of financial support for geography education. The society launched the effort with a gift of $20 million and pledged an additional $20 million to match contributions to the foundation through a challenge fund. The foundation will distribute approximately $2.2 million in 1991. The majority of these funds are earmarked to support a state-based network of geographic alliances. In addition to alliance grants, the foundation awards funds in four other categories: urban initiatives, preservice education, national initiatives and special projects, and Mississippi-based programs.

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Contact: Lisa Holmes

The program was begun by the National Geographic Society in 1985 to conquer geographic illiteracy, and to create an enthusiasm for learning about the world. The program brings together academic geographers and K-12 teachers through a network of state geographic alliances based on university campuses across the country. Interested K-12 teachers may ask to be placed on an alliance mailing list. The Geography Education Program publishes Update, a free, periodic newsletter that includes geography lesson plans. It sponsors summer teacher-education institutes in Washington, DC and several states, and sponsors teacher workshops in all states and territories. Through alliances, the program encourages the development of educational materials appropriate to state and local curricula.

Chapter 8

Foreign Languages

Current Thinking

Context

Fluency in foreign languages is no longer a luxury for Americans; it is a necessity if our nation is to compete successfully in the global marketplace and to function effectively in international affairs. The dramatic changes sweeping the world make it increasingly important for our students to develop second-language skills.

At the same time, growing cultural diversity within our own population brings increasing numbers of students into contact with speakers of other languages. Communication in multiple languages fosters a sense of humanity and friendship, provides insight into the way others think, and prepares students for a world in which nations and peoples are increasingly interdependent. Foreign language study also confers other benefits, including improved thinking skills and access to the rich literary and cultural heritage of other lands.

Despite the pressing need for linguistically competent citizens, the United States is virtually alone in the world in delaying foreign-language study until high school and concentrating its energies in two-year programs. Developing true proficiency in a second language, like a first language, takes time. At present, very few second-language programs in this nation give students that time. Moreover, even when language instruction is available, it is still sometimes built around traditional, formalistic teaching methods including memorization of grammar rules, pattern practice drills, and other rote exercises.

Yet there is evidence that this situation is beginning to change. Enrollments in college-level foreign-language courses have increased. Some states and communities have begun to incorporate second-language study into core curricula; several states now require or encourage schools to offer foreign-language instruction for elementary students. Furthermore, one of the objectives cited under the National Education Goals outlined by the president and the nation's governors is to "substantially increase the number of students competent in more than one language." Finally, foreign-language teachers are increasingly united on the principles and methods that should govern language instruction in American schools. In particular, most foreign-language educators today agree that multiple approaches can be effective, as long as the goal of instruction is communication rather than rote learning of the formal structure of language.

Principles for Reform of Foreign-Language Instruction

According to the American Council on the Teaching of Foreign Languages (ACTFL), the foreign-language teaching community is in increasing agreement that the following principles should guide reform and expansion of foreign-language instruction in American schools:

- Second-language study has the potential to offer significant benefits to all students.

- Language instruction must start earlier--preferably in elementary school--and longer sequences of courses must be established to permit development of proficiency, with links across the various levels. At the secondary and postsecondary levels, course offerings must be expanded to include the less commonly taught languages. Opportunities to study abroad must be expanded to include students from various disciplines and from all economic classes.

- Multiple approaches can be effective in addressing the variety of learning styles used by the wider pool of students who will be studying languages.

- Desired outcomes should be performance-based. It is what the student can do with the language that counts.

- Assessment strategies should be designed to measure and reward real world language proficiency rather than completion of curriculum.

- Language instruction must be integrated with other disciplines to make the most of an already crowded curriculum; content-based instruction is a means of increasing the opportunities for working in a second language by teaching other subject matter in that language.

- New technologies can be employed to adapt instruction to the needs of the learner, particularly in areas underserved by traditional programs. Nevertheless, interaction with an instructor is crucial.

- More teachers must be trained for instruction at all grade levels, and those teachers must have greatly expanded opportunities for continued improvement of language skills.

- Students with limited English proficiency, in addition to requiring help in developing their English proficiency, should be viewed as valuable second language resources for other students.

These principles are discussed in greater detail in the subsections that follow.

Research Findings: Language Study Can Offer Benefits to All Students

Language study appears to offer cognitive benefits beyond the opportunity to master the language studied. Research shows an increase in Scholastic Aptitude Test (SAT) verbal and mathematics scores of students who studied a second language in proportion to the number of years of second- language study over the scores of students who have not. Language students also score significantly higher on tests of creativity, a critical component of a curriculum that supports the learning of thinking skills as well as content and substance (Eddy 1981, p. 89). The study of another language by definition presents a framework for learners to reason out the components of the new language in contrast to their native language. It deepens learners' insights into their native language and culture by revealing new meanings of words and their nuances.

Furthermore, research shows that virtually all students can learn some aspects of communication skills in a second language, and language study has something to offer to the whole spectrum of the student population.

- A 1979 study found a positive correlation between language study and higher American College Test (ACT) scores. A significant finding was the positive correlation between second-language study and improved test scores after controls for the general intelligence level of the students were applied (Eddy 1981, p. 89).

- An earlier study of elementary school students taking Latin in Philadelphia showed that these students scored one full year higher than the control group on the vocabulary subtest of the Iowa Skills Test. The study also found that the students of Latin, primarily from inner-city schools, were performing at grade level overall, while the control group had fallen one year behind. A similar study in Washington, D.C., showed that sixth-grade students who had taken a second language (in this case, Latin, French, or Spanish) scored significantly higher on tests of English vocabulary, comprehension, and total reading skills (Masciantonio 1977, pp. 376-77).

Foreign-Language Instruction Should Focus on the Ability to Communicate

Second-language instruction has changed dramatically in the past few years. Rote memorization of vocabulary embedded in dialogues and manipulation of grammatical structures in the hope that someday the learner would be able to communicate have been replaced by instruction that provides communication opportunities from the first day.

A considerable body of research on language acquisition has developed. Although much of this research focuses on acquisition of English for speakers of other languages, the findings are largely applicable to acquisition of other languages by English speakers. Both research and practice have demonstrated that multiple approaches are effective for particular learners to acquire the skills and fulfill the communicative purposes they choose. Modern theories of second-language acquisition accentuate the complexity of the language-learning process and argue for a variety of strategies, all of which promote communication--as opposed to knowledge of formal linguistic structures--as their goal.

Factors that influence choice of instructional approach include the age of the learner, prior knowledge, cognitive style, context of learning, motivation, and goals to which the learner aspires. The teaching methods and the purposes of a language program for young children in primary schools differ from the approach and goals most appropriate to secondary and postsecondary students or for people in the worlds of business and government.

Language Study Should Start Early and Offer Longer Sequences

If American schools are to compete with the rest of the world in providing successful second language experiences to students, the choice of instructional method is but one issue. The crucial aspect of a foreign-language program is opportunity to learn; therefore, articulated sequences of instruction, which lead to advanced levels of proficiency, are required. The competencies that students gain depend on the time spent in learning the language, beginning in primary grades and continuing through high school and beyond.

As a result, elementary school foreign language programs that aim to develop proficiency and are linked to middle-school and high school offerings are becoming more common. Increases in the minimum years of language study required for honors diplomas in many state and local programs offer encouraging signs of change, as does growth in the number of schools offering International Baccalaureate programs. More rigorous and imaginative requirements for language proficiency at the college level also stimulate increasing opportunities for language study in the lower grades.

- The New York State Board of Regents approved its Action Plan to Improve Elementary and Secondary Education Results in New York in 1984. This plan embodies the idea that all children are capable of learning at high levels. Included in that plan is a commitment to second-language education for all students. Beginning with the class of 1994, all students will take at least two

years of second language prior to grade 9, and additional incentives for continuing language study are made in the form of requirements for the state's prestigious Regents' Diploma.

- Florida provides matching funds to local school districts for FLES (Foreign Languages in Elementary Schools) programs. The number of school districts participating grew from 13 in 1982-83 to 27 in 1988-89 (Draper 1989, p.13).

- Elementary foreign language has strong support in Iowa, where schools have received five-year grants to encourage planning and implementation of K-8 language programs. The Iowa director of education has expressed a desire to see Iowa students "bilingual by the year 2000" (Draper 1991, p. 12).

- The University of Minnesota, Minneapolis, has instituted proficiency requirements in language in place of traditional "seat-time" requirements, and encourages the study of less commonly taught languages by giving credit for first-year instruction in these languages and not in the commonly taught languages (French, German, and Spanish).

Desired Outcomes Should Be Performance-Based

The greater potential for real world interactions among second language learners and native speakers has caused educators to look more closely at the language tasks that students should be able to perform. Knowledge of isolated components of language is no longer seen as the goal. Students are now taught to use the target language at whatever level they are currently studying; it is what the student can do with language that counts.

The ability to describe real world proficiency in terms that could affect instruction was enhanced by the 1986 release of the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines (ACTFL 1986). Their purpose is to describe stages of proficiency in second-language learning in listening, speaking, reading, and writing. The guidelines enable teachers to focus on outcomes that are observable and measurable in terms of real-world communication. The guidelines have been used extensively in curriculum development around the country, for they help to define expected learner outcomes at several levels of proficiency; these outcomes can be reached using a variety of materials and methods. In February 1991 the Oklahoma State Board of Education approved a core curriculum that included foreign-language requirements tied to the guidelines.

The guidelines and performance-based outcomes are not without controversy, however. Some members of the profession prefer more traditional goals that seek to develop skills in language analysis as a means of understanding the forms and syntax of another, and one's own, language. Others criticize the guidelines because they evolve from an experiential and not from a theoretical base.

Assessment Strategies Should Be Designed to Measure Competency

The degree to which a learner's language accomplishes a specific task must be the most important factor in assessment. Foreign-language teachers have been in the forefront of performance-based assessment and the use of authentic tasks in the assessment process. Still, adequate instrumentation exists in only a few languages (Stansfield in Foreign Language Annals 23(5) 1990).

Several states and institutions have implemented measures to assess language competency:

- During the 1980s, under the leadership of ACTFL and the U.S. Government Interagency Language Roundtable, second language educators moved away from the testing of achievement (outcomes related to a particular lesson or period of study) to the testing of overall proficiency in a language (competence resulting from the totality of a student's study and experience). In such assessment, the student must demonstrate an ability to apply acquired language skills to respond appropriately to a wide variety of unrehearsed situations. Many language professionals have been trained in techniques for assessing oral language performance.

- The first Connecticut Assessment of Educational Progress in Foreign Languages was conducted in 1987 to determine the status of second language education in the state. Based on ACTFL's guidelines, students were tested in reading, writing, listening, and speaking. Rather than testing for minimum standards of achievement, educators sought to determine students' abilities to perform specific tasks.

- The Texas Education Agency has applied the ACTFL Proficiency Guidelines to the assessment of the language proficiency of teachers. Since November 1991, applicants for foreign-language teacher certification have been required to pass the Texas Oral Proficiency Test. This performance-based test measures oral proficiency in authentic contexts and produces a proficiency rating that is both reliable and valid (Stansfield and Kenyon 1991).

Instruction Can Be Linked Across Disciplines, Levels, and Institutions

Links across academic disciplines within schools, across educational levels, and across institutions can facilitate the development of proficiency in many subjects, including foreign languages. For example, language classes are a natural arena for the discussion of contemporary world issues. At the same time, the natural and social sciences must incorporate an international perspective as they address issues such as global warming, acid rain, world hunger, and the restoration of civil rights in newly emerging democracies. Furthermore, content-based instruction is a means of increasing the time available for second-language practice when other subject matter is taught in that language.

Colleges and universities play a significant role in setting the educational agenda for secondary schools. In fact, much of the recent increase in foreign language enrollments comes from enhanced college and university entrance and degree requirements, along with state mandated courses and programs. Partnerships between higher education and the schools are a promising avenue for increasing and improving opportunities for foreign-language study.

- Project ICONS (International Communications and Negotiation Simulations), initiated by the University of Maryland in 1982, enables high school and college students from 15 to 18 countries per semester to participate via computer link in simulations of high-level international negotiations on topics including international security, human rights, environmental issues, and foreign debt. Schools across the United States and in countries around the world form interpretation and policy teams to carry out negotiations which last for several weeks. In Maryland, where a Governor's Office grant has made ICONS implementation possible in 40 schools, a University of Maryland student team is available to provide technical assistance to high school teams.

- A national movement, Academic Alliances in Foreign Languages and Literatures, has spearheaded the development of grass-roots associations of foreign-language teachers from elementary and secondary schools, colleges, and universities. Regular meetings of these local alliances help teachers across grade levels to share knowledge and techniques, secure professional

development opportunities, and promote foreign language education in their communities (see Sources of Further Information).

Outside the education system, state offices concerned with international trade, economic development, and related issues can become important contact points for coordinating business, science and technology, and education interests. Business and industry partnerships with schools are a proven mode of improving educational programs.

- The Virginia Department of Education has proposed a pilot Japanese school for seventh- and eighth-grade students in the Tidewater area. The program would draw on the resources of the 15 Japanese-owned businesses in the area.

- Glastonbury, Connecticut, received a $1 million grant through the National Defense Education Act in 1958. An elementary foreign-language program, Russian-language program, and a language laboratory were all initiated with this funding. While federal dollars have long since ceased to support these programs, the community's commitment has allowed all of them to continue to grow and flourish (see "Examples of Promising Projects").

Finally, language teachers often use the community as a resource, and have, in language, a tool to reach out to parents. Many language teachers have the advantage of being able to communicate with non-English-speaking parents and other community members on behalf of the school and the students. Parents also become involved when they participate in one of many student exchange programs that bring a young person from another country into their homes for a year, a summer, or a semester. Thus, the presence of foreign-language programs in schools can help educators to forge closer ties to parents and others in the community. Similarly, students already fluent in a foreign language (including those whose English proficiency is limited) can be a valuable resource for students trying to learn it; both can benefit from the interaction.

New Technologies Can Improve Access, Efficiency, and Effectiveness

The rapid expansion of technology to meet educational needs provides an opportunity both to improve and to expand language instruction. The use of satellites and videotape can bring real-life experiences with language and culture into the classroom.

- The state of Hawaii has initiated a "Teleclass" program through which second language students are matched with English-language students in Japan, the Republic of Korea, and other countries. Exposure to the target language is available through actual interaction between the two classes using slides and tapes, telephone conversations, electronic mail, video, and other media.

- Language students in Louisiana are able to get first-hand experience with both language and culture by watching actual news broadcasts from such places as Germany and Russia. The broadcasts are available via satellite from Oklahoma State University, which rebroadcasts them for schools across the country.

Technology in the form of distance learning (satellite television and videotape in place of a classroom teacher) has also shown potential for bringing language instruction to small and rural school districts. However, the National Council of State Supervisors of Foreign Languages has voiced concern about the way in which this technology is being applied. In particular, to be successful, these programs

must ensure opportunities for students to use the language and to receive appropriate feedback from the teacher.

> "Distance learning classes should be used only when qualified teachers who are proficient in the target language(s) are not available or when qualified teachers want to enrich their programs. For example, distance learning might be a way to offer foreign language instruction in areas of population sparsity or when there are small numbers of potential students" (National Council of State Supervisors of Foreign Languages 1990, p.1).

The Nebraska Japanese Language and Culture Program (see "Examples of Promising Projects") is a model for appropriate use of distance learning technology to bring language instruction in a less commonly taught language to rural communities that could not otherwise provide such instruction.

Language Instruction Requires Thorough and Ongoing Teacher Development

In the past, foreign-language teachers could get by knowing <u>about</u> the language, because their communicative skills were seldom tapped. Today, their competency is on the line with every international visitor or exchange student, with every parent who sends magazines and tapes in a target language to the school, and with satellite newscasts coming into homes via cable. Present and future teachers must have affordable opportunities to develop high levels of linguistic and cultural competence if they are to respond to these challenges.

Many existing teachers were trained during the 1960s in a methodology that stressed the study of the formal structure of language. Many of these teachers have adapted to a world in which their students need more practice in developing the communicative skills required to converse internationally or within neighborhoods, to read contemporary magazines, or to watch satellite broadcasts. The need for continuous teacher development involves maintenance of existing teachers' own skills and their exploration of new approaches. In addition, the preparation of new teachers must ensure their acquisition of an advanced level of proficiency. Few will reach this level--and the self-confidence that today's focus on communication requires--without opportunities to live and study in the target cultures.

Several language organizations have developed professional standards for their members, including the American Council on the Teaching of Foreign Languages (ACTFL), Teachers of English to Speakers of Other Languages (TESOL), American Association of Teachers of French (AATF), and American Association of Teachers of Spanish and Portuguese (AATSP). These organizations are closely attuned to the National Board for Professional Teaching Standards' effort to develop voluntary certification standards in all areas and disciplines over the next five years. Development of professional standards is part of the broader effort to reform foreign language education to meet the challenges of today's increasingly interdependent world.

Suggested Reading List

American Council on the Teaching of Foreign Languages (ACTFL). 1986. Proficiency Guidelines. Hastings-on-Hudson, NY: ACTFL. Guidelines for assessing proficiency in speaking, listening, reading, and writing a foreign language.

Annual Review of Applied Linguistics: Communicative Language Teaching. Vol. 8 (1987). 1988. New York: Cambridge University Press. This issue of ARAL is a survey of major areas of communicative language teaching, which places this significant educational movement in its historical and theoretical context.

Annual Review of Applied Linguistics: Second Language Acquisition Research. Vol. 9 (1988). 1989. New York: Cambridge University Press. The 15 articles in this volume of ARAL examine the various features of research in second-language acquisition: linguistic features, social and psychological factors, cognitive and cultural styles, and the implications of these factors for classroom practices.

Birckbichler, Diane W., ed. 1990. New Perspectives and New Directions in Foreign Language Education. Lincolnwood, IL: National Textbook Company. Leading educators examine major issues such as factors that determine and influence language policy and planning at the local, state, national, and international levels; the necessity of designing and organizing carefully articulated programs; the impact of trends in teacher training and certification on teacher effectiveness; competencies for teachers of tomorrow; and the influence of the results of research on learning styles and strategies on classroom practice.

Curtain, Helena A., and Pesola, Carol Ann. 1988. Languages and Children: Making the Match. Reading, MA: Addison Wesley. Designed both as a methods text and as a practical guide for K-8 school districts and for teachers providing foreign-language instruction.

Directory of U.S. Elementary and Secondary Schools Teaching Arabic, Chinese, Japanese, Russian, 1991. 1990. Washington, DC: Friends of International Education, Institute for Crucial Languages. The first comprehensive roster of U.S. elementary and secondary school programs in Arabic, Chinese, and Russian, grouped by region: current programs are indexed by language.

Draper, Jamie B. 1991. Dreams, Realities and Nightmares: The Present and Future of Foreign Language Education in the United States. Washington, DC: Joint National Committee for Languages. Presents the findings of a questionnaire sent to individuals responsible for foreign-language education at the state level. Urges long sequences of language study as well as continuity between elementary, middle-school, and high school programs.

_____1989. The State of the States: State Initiatives in Foreign Languages and International Studies. Washington, DC: Joint National Committee for Languages. Presents findings of a survey of state foreign-language supervisors and others responsible for international education at the state level concerning changes in foreign-language instruction in their states during the 1980s.

Eddy, Peter A. 1981. "The Effect of Foreign Language Study in High School on Verbal Ability as Measured by the Scholastic Aptitude Test-Verbal." Washington, DC: Center for Applied Linguistics. Reports findings of a Montgomery County, Maryland, study to determine the effect of foreign- language study on performance on the verbal section of the Scholastic Aptitude Test (SAT).

Foreign Language Annals. **Vol. 23, no. 5. 1990.** The articles in this issue of FLA address the following topics: types of foreign-language testing, instructional technologies, advances made in elementary-level foreign-language instruction, and particular concerns of foreign-language teachers ranging from learning more about language programs in other countries to developing more opportunities for teachers to maintain and develop both their teaching and their language skills. Articles include the following :

Arendt, Jermaine D., and Warriner-Burke, Helen P. "Priority: Instruction. Teaching all Students: Reaching and Teaching Students of Varying Abilities," pp. 445-52.

Henning, Grant. "Priority: Testing. Priority Issues in the Assessment of Communicative Language Abilities," pp. 379-84.

Met, Myriam, and Rhodes, Nancy. "Priority: Instruction. Elementary School Foreign Language Instruction: Priorities for the 1990s," pp. 433-43.

Pusack, James P., and Otto, Sue K. "Priority: Instruction. Applying Instructional Technologies," pp. 409-17.

Stansfield, Charles W. "Some Foreign Language Test Development Priorities for the Last Decade of the Twentieth Century," pp. 395-401.

Foreign Language Annals. **Vol. 24, no. 2, 1991.** The articles in this issue of FLA address the following topics: the broadening of the scope of second-language research efforts to embrace various types of research paradigms; current status and needs of foreign-language teacher training; the cultural understanding that should accompany instruction in a foreign language; and factors currently influencing instruction of less commonly taught languages. Articles include the following:

Bailey, Kathleen M., et al. "Priority: Research. Research in the 1990s: Focus on Theory Building, Instructional Innovation, and Collaboration," pp. 89-100.

Bragaw, Donald H. "Priority: Curriculum. The Global Imperative and Its Metalanguage," pp. 115-24.

Strasheim, Lorraine A. "Priority: Teacher Education. Preservice and Inservice Teacher Education in the Nineties. The Issue is Instructional Validity," pp. 101-7.

Walker, Galal. "Priority: Instruction. Gaining Place: The Less Commonly Taught Languages in American Schools," pp. 131-50.

Heining-Boynton, Audrey. 1990. "Using FLES History to Plan for the Present and Future." Foreign Language Annals **23 (no. 6): 503-9.** Gives a history of FLES (foreign language in elementary schools) in the United States and offers a checklist for new practitioners and administrators of existing foreign-language programs to use as a means of self-evaluation.

Masciantonio, Rudolph. 1977. "Tangible Benefits of the Study of Latin: A Review of Research." Foreign Language Annals 10 (no. 4): 375-82. Examines the linguistic benefits of Latin in light of research documenting the relevance of Latin in building English vocabulary and reading skills.

National Council of State Supervisors of Foreign Languages. 1990. Distance Learning in Foreign Languages: A Position Paper with Guidelines: NCSSFL. Outlines the NCSSFL's position on distance learning. Concludes that the technique may be a viable method of foreign-language instruction in areas where there is a shortage of qualified teachers. Offers guidelines for approving and monitoring distance learning programs.

New York State Board of Regents. 1984. New York State Board of Regents Action Plan to Improve Elementary and Secondary Education Results. Albany: State University of New York, State Education Department. This report presents a comprehensive plan to improve teaching and learning in New York State's public and private schools. The Board of Regents' action plan enumerates learning objectives to be accomplished jointly by families, schools, and community organizations.

Panetta, Leon E. 1991. "The Quiet Crisis of Global Competence." Northeast Conference Newsletter 30 (Fall): 14-17. U.S. Representative Panetta outlines goals for foreign-language education in the context of proposed legislation (the Global Education Opportunities Act) and of changing world conditions.

Silber, Ellen S., ed. 1990. Critical Issues in Foreign Language Education. New York: Garland Publishing, 1990. Explores the major issues in current foreign-language education, including the psychology of second-language learning, English as a second language, assessment, foreign languages in the elementary school, proficiency, teaching materials, use of technology, foreign language for business, cultural implications, undergraduate and graduate literature and culture curriculum, teacher training, preparation of assistants, and teacher renewal.

Simon, Paul. 1990. "Priority: Public Relations. A Decade of Change to a Decade of Challenge." Foreign Language Annals 24 (no. 6): 13-18. U.S. Senator Simon summarizes accomplishments in foreign-language instruction over the past decade, reiterates the still-relevant proposals of his 1980 book, The Tongue-Tied American: Confronting the Foreign Language Crisis, and outlines what persons at all levels can do to encourage expanded foreign language study.

Stansfield, Charles W., and Kenyon, Dorry Mann. 1991. Development of the Texas Oral Proficiency Test (TOPT): Final Report for the Division of Teacher Assessment. Washington, DC: Center for Applied Linguistics. (Springfield, VA: ERIC Document Reproduction Service). Development and validation of the Texas Oral Proficiency Test (TOPT) are described.

Examples of Promising Projects

Immersion Language Program in Milwaukee Schools

Purpose: To achieve high levels of proficiency in a foreign language (French, German, or Spanish) by providing immersion in the target language beginning in kindergarten and providing opportunities to continue through grade 12.

Description: Each year students are selected at random from among applicants to enter one of three elementary immersion programs currently operating in the Milwaukee area. At the kindergarten level, children may use English, but their teachers respond in the foreign language. By first grade, the second language is the only language spoken in the classroom. All subjects are delivered in the target language (except English language arts beginning in grade 2), and by the end of grade 5 a student will have completed approximately 5,200 hours of exposure the second language.

Students from the three elementary school programs maintain and build on their second language skills in a middle-school education that covers grades 6-8. The school has the same basic offerings as Milwaukee's other middle schools, but immersion students have three of their class periods taught in their second language--mathematics, social studies, and language arts for the foreign language. Instruction in other subjects is delivered in English.

Students may continue their language instruction in high school. At this level, two class periods per day are taught in the student's second languages--social studies and continuing instruction in the second language. Students work with their guidance counselors to choose appropriate courses.

Why It Is Promising: High levels of fluency are attained through this immersion program, which emphasizes an early start, long sequence, articulation between levels, and content taught through language.

Evaluation: On standardized tests, students in the immersion programs regularly perform as well as or better than students who are enrolled in English-only programs. A recent longitudinal study showed that immersion students outperformed the control group in English reading and language arts.

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Foreign-Language Program, Grades 3-12, in Glastonbury, Connecticut

Purposes: To develop effective communication skills in a second or third language, as well as to acquire knowledge of the culture, history, and geography of countries and peoples studied.

Description: Since 1958 foreign-language instruction has been an integral part of the K-12 curriculum in Glastonbury Public Schools. Language instruction in Glastonbury has always focused on effective communication and cultural understanding. All students in the system have the opportunity to develop second-language skills through an extended, sequential program of skill acquisition and area studies in one or more foreign languages.

All students begin Spanish in grade 3. Students study Spanish daily until grade 6, where they may elect to continue with Spanish or begin French. In grade 7 foreign language becomes an elective, but 98 percent of the students continue with Spanish or French or both. In addition, highly motivated students are encouraged to begin Russian. Latin is a fourth option beginning in grade 9. Seventy-five percent of the students continue these languages through high school.

Foreign-language instruction is provided by a well-qualified staff of professionals. All FLES (foreign language in the elementary school) teachers are certified in Spanish and are selected for their ability to interact with young learners. All language teachers in grades 3-12 are familiar with the ACTFL proficiency guidelines, and the curriculum has been rewritten to reflect proficiency-based outcomes.

Foreign-language students are given every opportunity to put their language skills to use. The system sponsors language and international relations clubs and supports four language honor societies. Trips overseas are common, and the school district hosts exchange students every year. Russian students and teachers have participated since 1988 in the U.S.-U.S.S.R. High School Academic Partnership Program. The departments of science, social studies, and language undertake interdisciplinary projects to inject an international perspective throughout the school curriculum.

Why It Is Promising: Foreign language is an integral part of K-12 curriculum. All students in the district study a language. The long sequence produces impressive results in language proficiency. The community and school staff support interdisciplinary and international efforts.

Evaluation: Results of the Connecticut Assessment of Educational Progress in Foreign Languages indicate that a majority of students attain the intermediate or intermediate high level of proficiency by the junior year in high school. Results of the recently developed Comprehensive Russian Proficiency Test of the Educational Testing Service indicate that high school seniors studying Russian outperformed college students with four or more years of Russian in the skills of listening, speaking, and writing. Advanced Placement and SAT achievement scores are well above the state and national averages.

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Nebraska Japanese Language and Culture Program

Purpose: To develop Japanese reading, writing, listening, and speaking skills and to develop an understanding of the Japanese culture among high school students in rural, isolated districts.

Description: Japanese I and II are delivered for 50 minutes a day, three days a week via live, interactive, satellite television to 1,950 students in high schools in several cities throughout the State. During the telecast, 20 to 30 students interact with the teacher via telephone audiobridge. Student pictures, clothes, and articles used in featured schools are highlighted each day. Skits or dialogues that appeal to high school youth, as well as actual footage of Japan, also are used to enhance learning.

Two days a week, students are separated into groups of 10 to converse for 20 minutes with a native Japanese speaker by telephone audiobridge. Emphasis is given to conversational usage as opposed to drill and practice; little English is used. A strong rapport is built between the 25 telephone assistants and their students as they apply the skills they have learned. The facilitators (regular classroom teachers who do not know Japanese) act as vital co-learners and team leaders for their students.

Why It Is Promising: The courses use a combination of satellite, telephone, VCR, and audio cassette tapes in new ways to address three problems that currently affect the education system: (1) the lack of foreign-language skills in our citizenry, and especially skills in less commonly studied languages; (2) inequity in our schools; and (3) the lack of imaginative, sound instruction in distance learning programs. These courses also use several innovative approaches: technology is used to fit instruction rather than compromising instruction to fit the technology; the newest active-involvement teaching techniques are used; student enthusiasm about television is used to motivate learning; and students converse regularly with native Japanese speakers.

Evaluation: An independent evaluation conducted following the first two years of the program's operation indicated that, under conditions in which television-based instruction is linked with opportunities to practice and receive feedback on language knowledge, Japanese I students performed at a level exceeding that of students who received live instruction from certified language teachers.

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Gates County Schools, North Carolina

Purpose: To provide a language immersion program (French) to elementary students in a rural area. The program has several long-range goals, including improvement of SAT scores for participating students and development of skills needed ultimately to thrive in an increasingly international environment. The French language was chosen for the immersion program, because it is the sole foreign language taught in the area's high schools.

Description: Two schools in the rural Gates County school system offer immersion in French language to interested second- and third-graders. The programs are voluntary, although the schools conduct low-level screening to ensure that the students who participate are capable of performing adequately. The programs offer morning courses in English and afternoon courses in French. Science, social studies, and math are taught totally in French, while language arts is taught in English. The schools attempt to employ native French speakers as instructors; teachers have been hired from Belgium, among other locations.

The French immersion program has existed for three years. Class size (for fall 1991) ranges from 13 registered for grade 3 at Buckland Elementary to 21 registered at that school for the incoming second-grade class. While instruction in science, social studies, and math is offered only in French, the teachers will answer questions in English and students may ask questions in English. Mastery is not expected at these early grade levels, although the teachers encourage interchanges in French.

The French immersion program began at the Buckland and Sunbury K-3 schools and has expanded to Gatesville and T. S. Cooper Elementary schools as students from the former schools move into fourth grade. There are plans to expand the immersion program to the junior high school in order to continue the language education of the first cohort of participating students.

North Carolina has mandated instruction in a second language as part of its education plan. Students in K-6 who do not participate in the immersion sequence receive 30 minutes of foreign language every other day in the FLES (foreign language in elementary school) program.

Why It Is Promising: This program promises to develop a high level of proficiency by teaching elementary children. In addition, it is an example of an ambitious program of foreign language instruction in a rural area.

Evaluation: Initial testing of third-graders indicates that immersion students' achievement is at least equal to that of their nonimmersion peers.

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Dade County (Florida) Public Schools Elementary Spanish Program

Purpose: The Dade County (Florida) School System has developed a program of elementary Spanish as a second language. This program supports a Dade County School Board mandate that all students shall have the opportunity and shall be strongly urged to participate in programs designed to enable students to communicate and function successfully in an environment where Spanish or another language other than English is used.

Description: The Dade County School System offers a program consisting of elementary Spanish as a second language to students in grades 2-6 in all schools where parents have shown sufficient interest to maintain such a program. The program is also offered in grades K-6 at several pilot schools. The

goal of the program is to enable students to interact and communicate in Spanish with Spanish-speaking peers and others at various levels of proficiency (depending on length of time in the program).

The early program stages feature oral language use to help children build concepts in Spanish through a variety of formal and informal language experiences. Overall, the program develops listening, speaking, reading, and writing skills. The Dade County Public School System believes that students who study a second language at an early age will have fewer problems in pronunciation, accent, and mastery of the sound system and will be less self-conscious, thus exhibiting greater confidence in speaking the language.

A minimum of 30 minutes per day, or 150 minutes weekly, is allocated for the instruction of elementary Spanish as a second language. Placement in the program is based on parental authorization. Continued participation in the program requires a demonstrated mastery of the standards for the student's given grade level. Expected program outcomes follow nationally accepted norms for second-language learning and are adjusted in accordance with the grade level of instruction.

There are close links between the curriculum of the elementary Spanish as a Second Language Program and the Spanish as a Foreign Language Program offered in secondary schools. Students who successfully complete the grade 2-6 sequence will be prepared for more advanced Spanish courses.

Why It Is Promising: The countywide mandate recognizes the importance of foreign-language study for elementary-age children. The program in grades 2-6 promises to prepare students for advanced language study at an earlier age. Also promising is the goal of enabling students to interact in Spanish with Spanish-speaking peers.

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Sources of Further Information

Academic Alliances in Foreign Languages and Literatures
Marymount College
Tarrytown, NY 10581
(914) 332-4917

Promotes grassroots organizations of teachers of modern and classical languages and literatures at the elementary, secondary, and postsecondary levels. Provides materials and consultant support to interested teachers and administrators on how to start and sustain an alliance, facilitates communications among foreign language collaboratives through a column in Foreign Language Annals and a newsletter, Collaborare, and arranges academic credit and professional recognition.

American Council on the Teaching of Foreign Languages
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The American Council on the Teaching of Foreign Languages (ACTFL) is a membership organization of teachers of all foreign languages at all instructional levels dedicated to promoting and fostering the study of languages and cultures as an integral component of American education and society and to providing effective leadership for the improvement of teaching and learning at all levels of instruction in all languages. ACTFL accomplishes this task through a diverse program of programs and publications, including an annual convention, an extensive professional development program, its journal Foreign Language Annals, a newsletter, an annual reviews of developments in the field, and occasional publications.

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The Center for Applied Linguistics (CAL) is a nonprofit training and resource agency that houses the ERIC Clearinghouse on Languages and Linguistics. CAL also provides education consultation to clients, including the U.S. Department of Education, Department of State, and Department of Defense; state education agencies; private businesses; and overseas companies in the areas of foreign-language education and testing, workplace literacy training, English as a second language, and managing cultural diversity.

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Umbrella organizations for the language-teaching profession, these two groups work together to establish policy and increase support for language education. In addition to suggesting policy directions, JNCL publishes in an annual report of state initiatives which provides information on recent trends in language education .

Modern Language Association
10 Astor Place
New York, NY 10003
(212) 614-6406

The Modern Language Association (MLA) is a membership organization, founded 1883, which promotes "study, criticism, and research in the more and less commonly taught languages and their literatures and furthers the common interest of teachers of these subject." To fulfill these goals, the MLA arranges an annual convention and other meetings for its members, publishes scholarly journals and books, compiles an annual bibliography of the modern languages and their literatures, conducts surveys of English and foreign-language departments, maintains a job service for members, and carries out special projects.

National Foreign Language Center
1619 Massachusetts Avenue NW
Washington, DC 20036
(202) 667-8100

The National Foreign Language Center (NFLC) studies policy and long-range issues within the field of foreign language learning. NFLC focuses on nontraditional topics. It currently houses the Secretariat for the National Council of Organizations of Less Commonly Taught Languages.

Chapter 9

Adult Education and Literacy

Current Thinking

Context

As many as 20 to 30 million adults lack the basic skills necessary to function effectively on the job and to serve as full and active citizens of the community. An increasing portion of this population are persons for whom English is a second language and who lack literacy skills in their native language as well. Between 1978 and 1987, adult education participants with limited English proficiency almost doubled; such students now represent almost one-third of all participants in the adult education program. The adult education program is also being challenged by demand for services from a wide range of special populations such as the homeless, learning disabled, persons on welfare, displaced workers, and workers needing basic skills.

Employers and government officials have become increasingly concerned in recent years that a lack of education will prevent many adults from participating fully in the workforce of the 21st century. The need for more highly skilled workers with higher reading and math skills continues to increase. In a complex and technological society, workers and citizens need to embark on a path of lifelong learning to meet changing requirements.

Despite this increasing concern, empirical research on adult education and literacy programs and services, including workplace literacy, is quite limited in comparison with the available research on elementary, secondary, and special education. Most of the available research in adult education consists of descriptive studies or empirical investigations conducted by individual states. Only a few national descriptive studies have been conducted, and very few rigorous studies have been made at any level that identify effective practices and validate them through evaluation.

Drawing on the existing body of research, the following discussion is organized around selected topics related to adult education: the target population, instructional strategies and materials, assessment, support services, coordination, instructor and volunteer training, workplace literacy, and skills clinics.

Adult Education Population

The target population for adult education includes the following groups:

- Young adults who, after dropping out of high school, realize the need to improve their basic academic skills for success in a career and as parents;

- Older adults who wish to improve their literacy skills in response to home and family changes or because of career demands;

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- o Immigrants who do not speak, read, or write English well (they may be literate in their native language or illiterate);

- o Participants in the JOB Opportunities in the Business Sector program (persons on welfare, usually single female householders, who are required to take literacy training or job training or lose their welfare benefits);

- o Learning-disabled youths who did not succeed in school; and

- o Inmates in correctional institutions and other institutionalized adults.

Many more people are eligible for adult education but do not enter programs. The reasons for nonparticipation vary, but they probably fall in one or more of the following categories (Beder 1991):

- o Low perception of need for adult education;
- o Effort to participate perceived as too great;
- o Situational barriers, such as the need for transportation or child care, or time conflict due to work or family responsibilities; and
- o Dislike for school.

Researchers (Beder 1991; Fingeret 1983) note that, too often, policymakers and adult educators use a "deficit" model when describing adults with low literacy skills--that is, that the adults are deficient, emotionally frail, incapable people who need to be nurtured and guided. The research does not confirm this picture. Many adults with low literacy skills are competent community members, caring parents, and responsible employees. They often establish a strong support network for themselves with reciprocal relationships that result in mutual exchange, not dependence. They may well develop compensatory skills. All this does not mean low-literate persons need no help, but programs should build on participants' strengths and not assume that because people lack literacy skills they are generally deficient.

Instructional Strategies and Materials

Adult educators believe that effective instruction occurs when the learning environment is positive, opportunities for success are provided, participants receive encouragement and assurances from instructors, learners are aware of their progress and achievement, and sufficient practice time is provided. There is no consensus about how to organize instruction, especially for adults with low-levels of literacy. More support exists for appropriate content, although in both cases better research support is needed.

Organization. Instruction is usually organized in one or more of the following ways:

- o One-on-one tutoring (especially by volunteers);

- o Individualized instruction in a learning laboratory situation in which students work individually under the guidance of an instructor;

- o Small-group instruction, which may involve cooperative learning;

- o Formal classes; and

- Distance learning through telecommunications and laptop computer checkout.

Each of the main types of adult education--adult basic education, English as a second language, and adult secondary education--tends to organize instruction in its own specific way. Adult basic education classes tend to be organized either as one-on-one tutoring or individualized instruction; English as a Second Language (ESL) and adult secondary education tend to be organized in classes.

Individualized instruction, which permits programs to accept students in an open-entry/open-exit process, has become the principal format for adult education basic skills classes. This instructional strategy enables instructors to allow for differences in learner abilities, learning rates, backgrounds, and goals (National Adult Literacy Project 1984; Darling 1981; James 1981).

There has been increasing recognition of the utility of small group instruction in providing motivation, opportunities for cooperative learning, and mutual reinforcement and support. Some volunteer programs as well as school and community-college based programs use small group instruction as a regular mode of instruction.

Content. For adult learners at the basic level, the focusing of instruction on topics of direct interest to adult learners in their roles as parent, citizen, and worker has been found to be promising and is termed "contextual learning". This approach includes use of appropriate materials such as bus schedules, bank forms, grocery lists and labels, driver's license applications, and other forms and materials that low literate persons want to learn how to read. Some basic skills (e.g., rounding off to whole numbers) cannot be taught in context; but once students learn these skills they probably can be taught to transfer them to different situations.

Contextual learning has been particularly effective in ESL programs, as shown by increased learner retention and progress in mastering life skills. Contextual learning is also a growing trend in workplace literacy programs. Further investigation is needed, however, to determine the utility of this approach for increasing learners' abilities to apply a core set of skills across various domains of knowledge.

There is also increasing research support for providing a rich mix of activities and materials in instruction -- providing subskill remediation, including use of phonics or whole-word instruction depending on the students' needs, reading of interesting and challenging literature to develop skill in comprehension and speed as well as enjoyment, developing vocabulary, and giving much practice in writing.

Finally, computer-assisted instruction appears to be emerging as a promising instructional tool for adult learners (National Adult Literacy Project 1984). Computer-assisted instruction provides immediate and nonjudgmental feedback and reinforcement, allows a participants to work on individualized lesson plans at their own pace, makes drill and practice less mundane, allows self-conscious adults to make mistakes in private, and allows systematic measurement of student performance.

Assessment and Recordkeeping

Student assessment is performed for a variety of reasons, including diagnosis and placement of participants in adult education classes and measurement of their progress, evaluation of the program to identify where improvements are needed, and accountability to local and state officials who provide support for the program. Adult education researchers and practitioners generally agree that placement

and evaluation should not be limited to a single standardized test. Other measures also should be used to assess a student's progress, including personal observation, interviews, and reading inventories.

The adult education community is split regarding which standardized tests are the best for diagnosis or evaluation. The two primary test types in adult education programs are academic-based tests, which measure mastery of traditional academic skills and knowledge, and competency-based tests, which measure mastery of specific tasks or skills.

Serious questions exist about the reliability and usefulness of standardized academic tests, especially when programs use a single test for both accountability and instructional decisions. Some adult education researchers and practitioners believe that these tests do not accurately measure the skills and knowledge that adult education programs are trying to teach and are not the skills that the participants want to acquire (Sticht 1990).

Competency-based literacy instruments are becoming increasingly popular among states and are frequently used in national studies. These instruments, while measure adult performance on real-life tasks or skills, are designed for self-paced or individualized instruction. With competency-based instruction and assessment, learner outcomes are always specified, and the assessment is intended to measure success in the practical application of basic skills (Lytle and Wolfe, 1989). The primary disadvantage of competency-based instruction is the time required to identify a variety of competencies appropriate for instruction within a particular community and to prepare appropriate guides and materials. As with academic-oriented tests, competency tests may not measure the actual instruction provided. In addition, they have been criticized for not giving enough diagnostic information for teachers to use in planning further education for the student.

To produce more accurate information on a student's skills and progress in learning, adult literacy tests are also using open-ended questions (versus multiple-choice) and portfolios. Portfolios have been criticized, however, for taking too much teacher time and reducing time spent on instruction and counseling.

Because of wide differences in language, cultural, and educational backgrounds, many language-minority adults with limited English proficiency have difficulty comprehending standardized tests, which in turn biases their performance. Some adult educators note, however, that English-language standardized tests can be helpful once ESL students have gained an initial knowledge of English, because the tests can measure improvements in ability to read and write in English. With the rapid increase in the enrollment of ESL learners in adult education programs, from 19 percent of total enrollment in 1980 to 34 percent in 1989, improvement in assessments for this population should be considered.

Regardless of which test is selected for use in diagnosis and evaluation, adult education programs should be sensitive when assessing individuals.

Recordkeeping by adult education programs is often quite limited. Local programs may collect only the data required by the state and any federal agencies providing support. In particular, many programs do not collect regular attendance data on a participant over time. So if a student enrolls, receives services for a couple of months, leaves because of a family crisis, and later returns, the student may be counted twice. This lack of data on individual students makes it difficult to hold local programs accountable, not to mention preventing identification of problems that could be solved by technical assistance. Furthermore, local programs lose the opportunity to use data to identify especially successful approaches and teachers, and thus improve their programs.

Given the widespread availability and low cost of personal computers and data base programs, it appears increasingly appropriate for local programs to improve their recordkeeping on participants and plan to use descriptive and assessment data to identify which components of their program work best and which need improvement. One promising approach is the use of "smartcards," such as the California and Michigan EduCard experiments. The credit card-like smartcard holds personal information on students plus information on students' academic and social service needs and achievements and accomplishments. The card can be used both to record progress and to provide fiscal credit for program participation.

Support Services

Adult education participants often have multiple educational and economic needs. They often need services such as counseling, vocational evaluation, child care, transportation assistance, follow-up support for dropouts, job training, or referrals to social service agencies (Porter and Morris 1987).

The most commonly available support services are job placement and personal counseling, while the least available services are transportation and child care assistance (Young et al. 1980). Yet child care assistance may be critical when serving mothers on welfare and in family literacy programs, and transportation may be especially needed in rural areas. Local program directors need to review carefully the needs of the populations they are serving and arrange for adequate support services.

There is a trend toward the development of comprehensive learning centers that provide, at the center or nearby, basic skills instruction and possibly job training, employment services, and a range of social services. These centers may be located in a community college or provided through a community-based organization or school.

Coordination

Adult education participants may need services from a variety of agencies, including vocational education and job training, welfare services, health services, employment services, and others. Participants may seek employment or job promotion from an employer. Coordination with other agencies and organizations and with employers can maximize the resources available for adult education and improve available services to a community.

In a growing number of cases, different local programs may seek to serve the same client. Two of these programs include the Job Opportunities and Basic Skills Program (JOBS) and the Job Training Partnership Act (JTPA). These programs provide a broad range of services aimed at counseling and training, including adult basic skills training.

Adult education services are generally not well coordinated with services provided by JTPA and some other federally supported programs. In contrast, many local adult education programs do coordinate well with local community agencies, including health agencies and social service agencies. Workplace literacy initiatives are not widespread, but where they have been established, they have resulted in links between adult education and local employers and unions.

A recent review of state and local coordination activities found the following strategies helpful when establishing relationships between agencies:

o Development of interagency agreements, either formal or "working" agreements;

- o Provision by states of incentives for coordination;
- o Training and technical assistance to ensure that all staffs have appropriate skills and knowledge; and
- o Communication strategies, such as regular meetings to discuss and resolve issues and problems.

Moreover, local programs should not rest once an initial set of linkages has been established, but continue to expand contacts (Alamprese, Brigham, and Sivilli forthcoming).

A number of innovative programs have been developed to promote coordination of adult education services provided under various programs. A good example of one of these coordination efforts is the ACCESS/CASSET Centers in New York State, in which the state helps local communities coordinate adult education, JOBS, and JTPA, ensuring coordinated delivery of services to adults.

Instructor and Volunteer Training

The adult education research community generally considers the inadequate preparation of adult education teachers and volunteer instructors to be a fundamental weakness of adult education services (Foster 1989; Bliss 1988; Kazemak 1988). There is little research literature, however, that identifies appropriate recruitment and training strategies. Training is complicated by the part-time nature of adult education services (often offered in the evening), limited financial resources, and the predominance of part-time teachers and volunteer instructors (Tibbets el al. 1991). Most states provide for annual, short-term workshops and seminars. Some programs are provided on a regional basis. Local programs often prefer to put their limited resources into providing instruction rather than supporting additional training beyond that provided by the state.

General research literature on teacher training supports the need for sequenced training, in which teachers participate in several training sessions over a period of time. This practice lets them apply the training to their classroom situations and then discuss what worked in subsequent training sessions (Kutner et al. 1991). When designing training programs, local adult education directors should take this information into account.

Special Programs

Skills Clinics. In **AMERICA 2000** President Bush has proposed the establishment of "skills clinics," which are one-stop assessment and referral centers for education and training. At these clinics, prospective workers or workers seeking to change their jobs, could receive information about what skills are required for different jobs, have their skills assessed, and receive basic skills and job training. Two examples of such clinics are the North Valley Skills and Referral Center and the ACCESS centers in New York State. (Dutchess County's program is described in "Examples of Promising Projects" below). Coordination with programs such as these would benefit local adult education programs.

Workplace Literacy. Workplace literacy is generally distinguished from general basic skills instruction by its focus on improving job performance and productivity rather than focusing solely on improving basic skills of individuals for general use. The limited research in this area indicates that adult learners in programs that focus literacy instruction on job-required knowledge are likely to show greater gains in job-related reading than in general literacy skills. However, learners in these programs improve their general literacy at least as much as learners in general programs. Further

information is required to assess the utility of the functional approach for developing both specific and general literacy skills and the content knowledge that adults need to function successfully in society (Mikulecky and Diehl 1980).

Components associated with effective workplace literacy projects include the active involvement by project partners, active and ongoing involvement by employees, a systematic analysis of specific on-the-job literacy requirements, the development of instructional materials related to the literacy skills required on the job, and an evaluation that includes quantifiable indicators of success (Kutner et al. 1991).

Directions

In July 1991 the president signed P.L. 102-73, the National Literacy Act of 1991. Several initiatives contained in this act will guide the course of all adult education over the next five years.

- **The National Institute for Literacy**. The National Institute for Literacy is intended to improve and expand the system for the delivery of adult literacy services through basic and applied research, technical assistance, program evaluation and validation, and clearinghouse information dissemination activities.

- **Developing Accountability and Performance Standards.** The act requires the development of outcome indicators to measure the success of adult education programs. The Department of Education is currently giving states technical assistance to meet the evaluation requirements of the Adult Education Act.

- **Training for Teachers and Volunteer Instructors.** Training opportunities for adult education teachers and volunteer instructors will be strengthened. State literacy resource centers will be established to expand the capacity of adult education and literacy programs to provide instructor training.

Suggested Reading List

Alamprese, J., N. Brigham, and J. Sivilli. Forthcoming. Patterns of Promise: State and Local Strategies for Improving Coordination in Adult Education Programs. Report prepared for the U.S. Department of Education. Washington, DC: Cosmos Corporation. This report discusses what coordination means for adult education, identifies state and local initiatives supporting coordination, and identifies the benefits of and barriers to coordination.

Balmuth, M. 1987. "Essential Effective Adult Literacy Programs." Report prepared for the Project on Adult Literacy of the Southport Institute for Policy Analysis of the Research. Albany: New York Education Department. This report discusses the characteristics of successful adult literacy programs, including effective student recruitment campaigns and instructional methods.

Beder, H. 1991. Adult Literacy: Issues for Policy and Practice. **Malabar, FL: Kreiger Publishing Company.** This book describes the population of adults who could benefit from adult education; synthesizes and critiques the research on the motivation of adult learners and nonparticipants; reviews research on program outcomes; and provides recommendations for policy, practice, and research.

Bliss, W. 1989. "Providing Adult Basic Education Services to Adults with Limited English Proficiency." Report prepared for Project on Adult Literacy of the Southport Institute for Policy Analysis, Southport, CN. This paper discusses the significance of demographic trends that make us increasingly dependent on a growing-minority labor force. In addition, Bliss offers an overview of the population with limited English proficiency--the challenges they face, the services they currently receive, and the issues that must be addressed in the future.

Chall, J.S. 1987. "Developing Literacy in Children and Adults". In D. Wagner, Ed., The Future of Literacy in a Changing World. **New York: Pergamon Press.** This work suggests that adults in the early stages of acquiring reading skills may learn more rapidly than do children in the same stage, because adults have higher levels of oral language and knowledge. Chall also notes the difference between oral and written recognition and comprehension ability of adults and children.

Chisman, F.P., and Associates (ed.) 1990. Leadership of Literacy: The Agenda for the 1990's. **San Francisco, Calif.: Jossey-Bass.** This book provides a behind-the scenes look at our nation's response to the adult literacy crisis, from the perspective of authors who have been working to restructure the literacy field at the federal, state, and local levels. The book offers an authoritative roadmap for government, business, education, and community leaders who are seeking to bring about a more literate citizenry and workforce.

Chisman, F.P. 1989. Jump Start: The Federal Role in Adult Literacy. **Final Report for the Project on Adult Literacy. Southport, CN: Southport Institute for Policy Analysis.** This report points out that there are two aspects to the literacy problem in the United States: the difficulties experienced by all those with limited skill in reading and writing and the difficulties experienced by those with limited proficiency in English. Chisman also explores the a lack of literacy programs in the workplace and recommends governmental reform.

Darling, S. 1981. "Jefferson County Adult Reading Project." Final report submitted to the Kentucky State Department of Education 1981, ERIC Document Reproduction Service No. ED 204 600. This report describes a model project intended to demonstrate a reading program for adults

with severe reading problems. Great strides were demonstrated in creating awareness in the community of both program and the magnitude of the illiteracy problem in Jefferson County. The book includes description and analysis of the program as well as recommendations for establishing a similar program.

Fingeret, H. 1983. "Social Network: A New Perspective on Independence and Illiterate Adults." Adult Education Quarterly, 33 (Spring): 133-46. This article describes the social structures that illiterate adults create, and the relationship of those structures to the adults' notions of dependence and independence. Fingeret provides a basis for understanding why adults seek to become literate and describes some factors that should be taken into account when developing programs and training teachers.

Hunter, C.S., and D, Harman. 1979. Adult Illiteracy in the United States. New York: McGraw-Hill. A comprehensive look at adult illiteracy, including definitions, demographics, programs and practices, and policy recommendations. This work recognizes that illiteracy does not mean simply a lack of functional reading abilities, but rather a gap in both knowledge and skills.

James, Wayne B. 1981. "The Care and Feeding of Instructors of Adult Literacy and Basic Education". In L.Y. Mercier, ed., Outlook for the 80s: Adult Literacy. U.S. Department of Education, Basic Skills Improvement Program, September. This article describes the need for high-quality instructors and discuses issues regarding the role of instructors, the skills required by instructors, the method of selecting instructors, and instructor training.

Kazemek, F.E. 1988. "Necessary Changes: Professional Involvement in Adult Literacy Programs." Harvard Educational Review 58 (November): pp. 464-87. This article critiques the attitudes implicit in major literacy programs and examines the underlying assumptions about the nature of literacy. It argues that adult literacy professionals must overcome political and institutional barriers to effective literacy and offers an alternative methodology.

Knowles, M.S. 1984. Adult Learning: A Neglected Species. Houston, TX: Gulf Publishing Company. Based upon developmental and educational psychology, this work on adult learning focuses on the adult learner as an individual first.

Koen, S. 1986. Study of Adult Literacy Curricula. New York: Literacy Assistance Center, 1986. This study examines specific instructional/curriculum approaches, differences between instructors' and program managers' definition of curriculum, and staff satisfaction with various instructional and curricular approaches. It indicates the need for the formation of a clear educational philosophy, and points the way to various kinds of technical assistance that would help program staff develop.

Kutner, M., R. Sherman, L. Webb, and C, Fisher. 1991. A Descriptive Review of the National Workplace Literacy Program. Washington, DC: Pelavin Associates. This examination of projects funded during the National Workplace Literacy Program's first year of operation identifies key components associated with promising workplace literacy projects and recommends ways to improve program effectiveness. It includes a review of the research literature, analyses of data from 29 of the 37 projects, and assessments of site visits to six projects.

Kutner, M., S. Furey, L. Webb. and V, Gadsden. 1990. Adult Education Programs and Services: A View from Nine Programs. Washington, D.C.: Pelavin Associates, 1990. This report provides an up-to-date perspective on the operation and services of adult education programs.

It draws on the research literature, interviews with the state adult education directors in eight states serving a large number of adult education participants, and information from nine local adult education programs.

Lerche, R. 1985. Effective Adult Literacy Programs: A Practitioner's Guide. New York: Cambridge, University Press. This guide describes adult literacy programs in the United States, with an emphasis on promising practices--particularly those that create a coherent system of adult literacy instruction.

Lytle, S.L. and M, Wolfe. 1989. Adult Literacy Education: Program Evaluation and Learner Assessment. Columbus, OH: ERIC Clearinghouse on Adult, Careers, and Vocational Education. This monograph is intended primarily to make accessible to adult literacy educators the current literature in the field on program evaluation and learner assessment. In addition, this information may be of value to policymakers, funders, and researchers who are working to improve the quality of literacy education for adults.

Mikulecky, L., and W. Diehl. 1980. "The Nature of Reading at Work." Journal of Reading (vol. 2): pp. 221-27. This study found that reading on the job is extremely common in most occupations. The two most important conclusions are that (1) people use reading materials to remind themselves to do things and (2) they often use reading in conjunction with other sources of information. Reading at work was also found to be quite different from reading at school.

National Adult Literacy Project. 1984. "Guidebook for Effective Literacy Practice, 1983-1984." Network, Inc., and Far West Laboratory. This guidebook is designed to provide the reader with information on effective literacy practices. It emphasizes that the programs that respond to the unique personal needs and learning styles of disadvantaged adults are the most successful.

Newman, A. 1980. Adult Basic Education: Reading. Boston: Allyn and Bacon, 1980. This book includes information on diagnosing learner characteristics, developing goals and objectives, planning assessments, planning teaching strategies, organizing for instruction, planning resources, implementing instruction, and evaluating. A strength of this book is that it treats the adult illiterate as an adult, not as a schoolchild.

Porter, D., and J. Morris ed., 1987. "Adult Basic Education: Child Care, Transportation, Support Services Workbook." Austin: Texas Education Agency (ERIC Document Reproduction Service No. ED 290 007). This workbook focuses on two important needs of adult basic education students--child care and transportation and suggests ways that program administrators can develop appropriate, workable, community-based strategies to meet these needs.

Sarmiento, A.R., and A. Kay. 1990. Worker-Centered Learning: A Union Guide to Workplace Literacy. Washington, DC: AFL-CIO Human Resources Development Institute. This report supplies background information on workplace literacy, the changing workforce, and unions' involvement in education and training. It outlines specific suggestions for designing, implementing, and operating a successful workplace literacy program. It also recommends other services a union can offer if the employer is unable to provide a complete workplace literacy program.

Sticht, T. 1990. "Testing and Assessment in Adult Basic Education and English as a Second Language Programs." San Diego: Applied Behavioral Cognitive Sciences, Inc. This report expands on the discussion of standardized tests given in the federal law and the Department of Education rules and regulations that implement the law. It provides information that can be helpful to

practitioners in the selection and use of standardized tests and may serve as a resource for staff development.

Tibbetts, J., M. Kutner, D. Hemphill, and E. Jones. 1991. "The Delivery and Content of Training for Adult Literacy Education Teachers and Volunteer Instructions." Washington, DC: Pelavin Associates. This report summarizes the available information about the delivery and content of Adult Basic Education (ABE) and English as a Second Language (ESL) training for teachers and volunteer instructors. The report discusses the factors influencing ABE and ESL training, patterns for the delivery of training, and content of the training.

U.S. Departments of Education and Labor. The Bottom Line: Basic Skills in the Workplace. Washington, DC: ERIC Document Reproduction Service No. ED 291 922. Intended for employers considering establishing a basic skills program in their organization, or for those employers with programs that need modification, this report provides background information and examples of effective program designs to help improve the basic skills of the nation's workers.

_____. Building a Quality Workforce. 1988. Washington, DC: ERIC Document Reproduction Service No. ED 298 300. Recognizing that our nation's productivity, and therefore economic strength, depends on our ability to maintain a high-quality workforce, this report attempts to identify the needs of the business community for qualified workers and to foster partnerships among the various sectors of our society that will overcome the job-skills gap.

Young, M.B., J. Hipps, G. Hanberry, P. Hopstock, and M.R. Goldsamt. 1980. An Assessment of the State-Administered Program of the Adult Education Act. Report submitted to the Office of Program Evaluation, U.S. Department of Education, Washington, DC: Development Associates. This study provides an analytic description of the State-Administered Program of the Adult Education Act with particular emphasis on program participants. It also identifies a set of measures of program effectiveness that can be used in a longitudinal design.

Examples of Promising Projects

Arlington Education and Employment Program, Arlington County, Virginia

Purpose: To meet the education and employment-related needs of adults with limited English proficiency in Arlington County, Virginia.

Description: More than 3,000 adults with limited English proficiency are served by this comprehensive program which is structured to allow maximum student accessibility. The program first assesses the adults' literacy skills and personal schedules, and then refers them to one or more of four instructional programs. Students can take classes at various times during the day and evening in locations near their homes. They can also visit the Adult Learning Center to be instructed by experienced ESL teachers or to use literacy software programs that allow the students to learn English at their own pace.

Adults who work in five industries--the hotel/motel industry, the apartment/office building industry, hospitals, nursing homes and the Seven-Eleven stores of Southland Corporation--can obtain literacy instruction at their workplaces. These workplace literacy programs are customized for occupations that employ large numbers of speakers with limited English; for example, the hotels' housekeeping and food and beverage staffs. Participants can attend classes on company time, or they can receive a cash bonus from their company for attending on their own time.

Finally, a family literacy program enables limited English-speaking parents with schoolchildren to learn English reading, writing, and parental skills.

Why It Is Promising: The program effectively provides assessment and referral services to suit each participant's level of skill, interest, and personal schedule. Program personnel constantly monitor the progress of participants. Highly competent professional staff and the availability of modern learning technologies also contribute greatly to the success of this comprehensive approach.

Costs: Annual operating costs are $1 million. Costs per student vary by component. The project also has $20,000 in federal, but state-administered, discretionary funds for staff development. This money enables the program to provide ongoing professional development activities for its staff and for ABE/ESL teachers in the Northern Virginia area.

The workplace literacy programs are funded in part from a demonstration grant from the U.S. Department of Education and involve a three-way partnership of the Arlington and Alexandria schools, the Arlington and Alexandria Chambers of Commerce, and the five industries in these localities.

Evaluation: Reports on this program have indicated that 78 percent of ESL students complete the program and 78 percent of the completers are promoted to the next education level. Supervisors in the workplace program report that 84 percent of the employees had increased their understanding of job-related English, 72 percent had improved speaking, and 78 percent had improved productivity at work.

Additional Information: The program is complex and strives to be comprehensive in its approach to programming for adults with limited English proficiency. Different components of the program were added as staff came to understand the evolving needs and priorities of these people.

Contact: Inaam Mansoor
Director, Arlington Education and
Employment Program
Wilson School
1601 Wilson Boulevard
Arlington, VA 22209
(703) 358-4200

Our House and Our House II, Little Rock, Arkansas

Purpose: To provide basic skills, life skills, and job training to homeless adults in Little Rock, Arkansas.

Description: Our House, a shelter for the homeless in downtown Little Rock, was founded in 1987 by the Arkansas Conference of Churches and Synagogues. For the past two years the Little Rock Adult Education Center has provided instruction at Our House and will assist with programs at Our House II. Our House II is the nation's first job training center for the homeless. It now occupies three buildings at a former Veterans Administration Hospital complex in Little Rock.

Participants are taught basic skills and computer skills, thus improving their chances to get good jobs. Shelter residents are required to look for jobs and to set aside earnings in a savings program. The Starting Point Day Care will serve about 25 children of training center program participants.

Volunteers and staff of Our House, Inc., received a letter from President George Bush recognizing them as the 290th Daily Point of Light.

Why It Is Promising: This is a cooperative effort, using funds and equipment provided by local businesses. IBM is providing computers, printers, and software to be used in training participants of Our House II. Levi Strauss Foundation is providing funds to hire a full-time computer instructor, as well as supplies and equipment for the day care center. Volunteer groups have refurbished rooms and done yard work.

Costs: Our House received a five-year, 1.1 million grant in October 1990 from the Federal Housing and Urban Development Agency to finance Our House II as a combination training center, day care center, and transitional housing for the homeless.

Contact : Camile Lide
Coordinator, Adult Education for the Homeless
Arkansas Department of Education
2020 West Third Street
Little Rock, AR 72205
(501) 324-9479

Fayetteville Technical Community College, Centralized Assessment and Retention Center, Fayetteville, North Carolina

Purpose: To assess the educational needs of potential students and tailor instruction for each.

Description: Fayetteville Technical Community College (FTCC), one of the 58 community colleges in North Carolina, has developed a Centralized Assessment and Retention Center to serve adult students enrolled in its nontraditional literacy and basic skills programs. The first such center in the state, it is the key element of FTCC's innovative, nationally recognized model. Located at the college's major Continuing Education Annex and integrated with its computerized Literacy Learning Lab, the Centralized Assessment and Retention Center and its staff enhance the potential of students and the literacy and basic skills program.

The Center staff screen potential students, by telephone, and then interview them individually at the center to discuss the program and the application goals.

Following formal testing, every effort is made to provide students with a relaxed and comfortable environment, during which students return to the center for an informal group orientation session. Following orientation the students receive individual counseling regarding their test results, and each student helps design the "track" that lead to achieving his or her educational and personal goals.

Why It Is Promising: The center functions as a hub for student recruitment, assessment, counseling, orientation, placement, tracking and retention. The center emphasizes the team concept, allows for centralized management of data, and constantly seeks to improve service delivery.

Costs: Annual costs are approximately $79,000 for full-time staff; $10,000 for equipment including computer, audiovisual, and testing materials; and $52,000 for two full-time resource specialists.

Evaluation: Various tracking and assessment tools are used to monitor the progress of each student and the program overall. Quarterly FTE reports and graphs, weekly tracking reports prepared by instructors, instructor/course evaluations, periodic class verification reports, quarterly instructor evaluations of students and annual report on basic skills data, all contribute to an overall picture of progress on the goals set and reached by the students themselves.

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Joint Upward Mobility Project (JUMP), Connecticut

Purpose: To provide basic skills and literacy training for current employees or potential entry-level employees at some of Connecticut's largest employers.

Description: Several of Connecticut's largest employers found it difficult to identify job candidates with adequate basic skills. Some of these employers had begun shipping jobs abroad where the labor pool had sufficient basic skills. The severe shortage of employable individuals brought private corporations together, even competitors, to address the literacy needs of both community and business.

An active committee of business partners developed curricula specific to these industries. The project is also using computer-assisted instruction and is adapting computer software specifically to meet the literacy needs of these industries. Skills being improved include the ability to read and comprehend employee handbooks and customer correspondence, basic math skills for the workplace, and the ability to put a number of different concepts into a logical form for problem analysis.

Why It Is Promising: Competitive industries have cooperated in tackling a literacy problem affecting American competitiveness. This cooperative effort has attracted state and local funds as a result of the incentive provided by a federal grant. Business partners have agree to continue the program after federal funding ends. Innovative and industry-specific curricula and assessment instruments are being developed. Case managers coordinate support services and help participants get education, training, and promotion opportunities.

Costs: This project is funded by a grant of $380,000 from the U.S. Department of Education's National Workplace Literacy Program. Partners match 30 percent of the total program costs either in cash or in kind (i.e., providing facilities). The project has attracted additional state and local resources totaling $819,000.

Evaluation: Evaluation is being conducted on both an ongoing and a summative basis by Arthur Anderson, Consultants. Quarterly, the project collects information not only on numbers of participants, their characteristics, and pre/posttest scores, but also on work-related successes such as the numbers of participants placed, retained, and promoted.

The evaluator, which has developed a series of original instruments to be used in conducting the evaluation, focuses on the effect of the project on the policies of the partner industries and the extent to which the model is replicable. The evaluation is being overseen by a subcommittee of the partner board.

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West Humboldt Employment Training Center, Chicago

Purpose: To transmit literacy skills to parents and to help children between the ages of three and five acquire competencies enhancing the likelihood of later school success. This program is a collaboration between the elementary schools, the high schools, and community-based organizations in the West Humboldt neighborhood of Chicago.

Description: In 1989-90, Chicago Commons, a community-based organization, undertook a nine-month investigation to determine how best to provide literacy services for the community. The process involved all the educational and social service providers in the West Humboldt Park neighborhood, including 13 elementary schools. Following a needs assessment, approximately 20 groups met regularly to formulate a plan, the centerpiece of which was the establishment of the Family Literacy Center.

All parents receive literacy services so that they can help educate their children and improve the economic status of their households. They participate in pretraining activities designed to assess their literacy skills, to establish job goals, and to raise motivation. The project also provides comprehensive onsite support services to all participants.

Head Start classes are being established for children 3-5 years of age. Younger children and older children (after school) receive educational services at the project's onsite child care center, which includes a well-developed educational curriculum.

Why It Is Promising: This is a strong partnership between the local public schools and community-based organizations in an area where black and Hispanic populations are educationally and economically disadvantaged and need many services. More than half of the participants receive public aid. The family focus emphasizes recruitment of minority men with children who traditionally have not been involved in Head Start activities.

The child care center allows parents with very small children (below the age of three) to participate. And finally, the project gets teachers from the City Colleges of Chicago, has a strong link with area businesses for job training and placement opportunities, and receives referrals and funding support from local welfare agencies.

Costs: The budget for the first full year of operation is $299,265. The total includes public sector grants from the Illinois secretary of state's literacy program and the Illinois Department of Public Aid ($100,000), as well as private sector grants and contributions of materials, furniture, and equipment.

Evaluation: The West Humboldt Employment Training Center has contracted with Northern Illinois University's Center for Governmental Studies to perform an outside evaluation. At the beginning and end of the program year, parents complete a questionnaire that asks them to assess the knowledge of child development and the understanding of parental roles that they have developed. Learning and social development gains made by children participating in the program can be compared with the gains by control groups from others schools participating in the Head Start or state-funded prekindergarten programs.

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Skills Enhancement Training (SET) Program

Purpose: To help cafeteria workers in the Washington, DC, area perform more effectively in their current job and gain skills for advancement.

Description: SET delivers training in basic skills related to the work of 240 cafeteria employers, most of whom are minority women. About 75 percent of these workers cannot advance to better jobs because they lack basic skills. SET has developed a curriculum that is based on the needs of the workers and the employers. The curriculum incorporates job-specific material such as instructions for operating kitchen equipment and for understanding and following cookbooks. Classes are conducted about four hours per week at or near the worksite.

Employees in the many universities and government agencies of the nation's capital serve millions of meals each month. Guest Services, Inc., for example, reported that its 700 employees served 817,000 government workers and 455,000 visitors during August 1989. Both the union and the participating firms believe that lack of basic skills impairs cafeteria employees' ability to follow directions, understand written procedures, and follow safety rules.

Why It Is Promising: Workers are involved in every aspect of the project. Interviews, written exercises, and analysis of task performance are used to measure skills before and after training. A "train the trainers" course alerts educators to the special needs of this workplace and to its curriculum. Workers who complete the training get a $200 bonus.

Costs: This project is funded by a U.S. Department of Education grant of $338,580, with a match of $149,900 provided by the partners in cash and in kind.

Evaluation: An external evaluation is being conducted by COSMOS Corporation, Inc., of Washington, D.C., on an ongoing basis. Procedures will measure quantitative changes in skills required to perform work as well as work-based measures such as improved job performance, increased job attendance, and increased enrollment in educational activities. Analysis and recommendations to be used as a guide for further workplace efforts will be included in the final evaluation report.

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Ventura Unified School District, California

Purpose: To provide an individualized, competency-based, high-technology training program for adults with disabilities in Ventura, California.

Description: This program provides competency-based adult and vocational education alternative programs for adults with disabilities. These high-technology training programs--in areas such as computer-aided drafting, computer applications, electronic office occupations and electronic repair--lead directly to job certification and placement options.

Why It Is Promising: Through this program, adult and vocational educators provide specialized training to adults with a variety of needs: adult basic education, general equivalence diploma (GED), and vocational training. The program enrolls adults with disabilities, including deaf and hard-of-hearing, emotional and mental disturbance, learning disability, mental retardation, and physical disabilities. Because this program is individualized, all adults fit right into the overall program with minimal adjustment.

This program combines resources from the school district and the state with funds provided by fees from outside agencies and businesses. This combination has allowed an expanded operation that meets the specific adult education and vocational training needs of adults with disabilities.

Costs: Funded from a variety of sources including the U.S. Department of Education, the California Department of Vocational Rehabilitation Act, private insurance carriers and student fees, the program costs $2 million annually.

Evaluation: Ongoing evaluations by the California Department of Education have rated this program very high. More than three-fourths of the adults are placed in jobs within 60 days after they complete the program.

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Technology for Literacy Center (TLC), St. Paul, Minnesota

Purpose: To use computers and technology to teach literacy and adult basic education skills to adults.

Description: In TLC, adult learners who need to improve their basic skills in reading, writing, and math receive direct services through extensive use of technology, trained volunteers, and a collaborative model that combines public and private partnerships. Adults can use the computers on their own time, at their own speed during the day, in the evenings, or on the weekends. Volunteers help in office functions, computer instruction, or special events.

The project is located in a shopping mall to increase its accessibility to the public and to handicapped adults. Some 800 to 1,000 adults are served each year by TLC. TLC conducts research and training on a limited basis and provide supports for the 14 incentive grant sites.

Why It Is Promising: TLC trains teachers, administrators, college students, and volunteers to bring technology in, to their adult education programs. In one location, potential technology can be explored and developed, then used by other providers through grants to existing Minnesota literacy programs. As a new approach to solving the problem of functional illiteracy, TLC provides the best instructional design and the latest technology available.

Evaluation: Recruitment of participants was expected to begin with 200 and expand to 500 in subsequent years. However, TLC recruitment was actually 266 percent above the projected numbers in the first year. Achievement was judged comparable to other programs, and student retention reached 78 percent.

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Dutchess County BOCES ACCESS

Purpose: To provide a community centered, comprehensive, one-stop center for educational opportunities or referral.

Description: The ACCESS program is a comprehensive center that offers education and training for adults and out-of-school youth in adult basic education, GED instruction, English as a second language (ESL), life management skills, and occupational education. Support services such as child care, transportation, case management, and counseling also are provided.

Why It Is Promising: ACCESS provides a direct example of the skills clinics proposed for America 2000. Transportation services bring the client to the center. Providing child care for children through age six removes a barrier to entering education. GED, academic skills, and ESL training develop basic skills, and occupational training leads to self-sufficiency. The life management skills component encourages clients to think and act for themselves, to be responsible for their daily actions, and strives to raise their self-esteem.

Case management counseling ties all the components together, addresses each client's individual needs, and provides links to the resources of the community. An unusual unique feature of the program is the integration of adults into secondary occupational classes.

Costs: Approximately $800,000.

Evaluation: In the first year of operation, 61 percent of the persons who completed the program were placed in unsubsidized employment, and 79 percent retained employment for six months or more. Program enrollment and completion rates increased by 90 percent over the first year of operation.

Additional Information: This program serves institutionalized adults, incarcerated youth, adults who need vocational rehabilitation, Aid to Families with Dependent Children (AFDC) clients, Home Relief adults, dislocated workers, employed clients who need basic skills for the workplace, students who have a high school diploma, and adults who need English language skills.

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North Valley (NOVA) Skill Testing, Assessment, and Referral (STAR) Center, Silicon Valley, California

Purpose: To assist dislocated workers who may have poor English skills, need technical training, or need help in making a transition from one profession to another. While the center may use the California State Employment Service's computerized job bank to match participants with potential jobs or to identify skills necessary for certain jobs, the center's primary purpose is not placement but referral to training. Because there is a high demand for training in the Silicon Valley area, the NOVA-STAR Center both subsidizes and contracts with outside training organizations, such as community colleges.

Description: The North Valley (NOVA) Private Industry Council established an advanced Skills Testing and Referral Center (STAR) in the Bay Area Silicon Valley funded primarily through JTPA. Because the center is a cooperative, it also draws resources from other sources such as the California State Employment Service, which provides the center's staff and has installed a computer terminal with access to the state's computerized job bank. The center serves approximately 2,500 people per year.

Participants in the NOVA-STAR Center first undergo a series of skill assessments. (The process may take up to four hours). NOVA-STAR has approximately 12 types of skills tests at its disposal, both paper/pencil and computerized, to measure interest, aptitude, and ability. For the dislocated professionals, the testing includes a test similar to the Myers-Briggs test that assesses the management style of the participant and identifies the environment in which the participant functions best. On rare occasions, when a job has a physical requirement, counselors from the center will observe a participant in an actual work simulation.

After the testing, the counselor assigned to the participant spends about one-half hour interpreting the results of the assessment and then another hour and a half discussing the skills identified, the skills needed for certain jobs, and the training and job opportunities available.

During this interview the counselor makes recommendations and refers the participant to job opportunities or for training activities. For workers dislocated by technological advancements that have made a job obsolete, a recommendation for a training of new skills may be in order. For workers whose skills have not been outdated, a simple retraining may suffice. Of the approximately 2,500 people the center serves each year, 80 percent need only minimal services to become reemployed. The remaining 20 percent need more intensive services, such as upgrading of skills or

language training. As a part of its training component, NOVA-STAR offers intensive job-related workshops, including resume writing, solicitation of jobs, and interviewing.

Why It Is Promising: NOVA-STAR provides a coordinated set of assessment, education, and training services to help dislocated workers to upgrade and strengthen their work skills. In its first year of operation, NOVA-STAR surpassed all projections of effectiveness in placing participants in training programs and jobs. The center works closely with the businesses and corporations in the area and occasionally has been asked to fill positions in businesses that are expanding. Much of the center's success is attributed to its close ties with the community. Because the economic climate has been worse than was forecasted when the NOVA-STAR Center was created, its success is remarkable.

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Sources of Further Information

American Association of Adult and Continuing Educators (AAACE)
1201 16th Street, NW
Suite 230
Washington, DC 20036
(202) 463-6333

The American Association of Adult and Continuing Educators functions primarily as an information clearinghouse; it evaluates adult and continuing education programs and sponsors conferences, seminars, and workshops.

American Association of Community and Junior Colleges (AACJC)
National Center for Higher Education
One Dupont Circle, NW
Suite 410
Washington, DC 20036
(202) 728-0200

The association, whose members are two-year community and junior colleges and affiliates, produces studies on lifelong education and the mass media and humanities in education, and promotes partnerships among high schools, employers, and members.

American Council on Education
General Educational Development Training Service
One Dupont Circle, NW
Suite 20
Washington, DC 20036-1193
(202) 939-9490

The American Council on Education conducts research in government relations, women in higher education, minorities, management of institutions of higher education, education credits, leadership development, and international education. Members are colleges, universities, and education associations.

AFL-CIO Human Resources Development Institute
815 16th Street NW
Washington, DC 20006
(202) 638-3912

The Human Resources Development Institute (HRDI) is the employment and training arm of the AFL-CIO. HRDI researches and disseminates information about literacy, school-to-work transition, and dislocated worker programs.

Business Council for Effective Literacy
1221 Avenue of the Americas-35th Floor
New York, NY 10020
(212) 512-2415

The Business Council for Effective Literacy (BCEL) operates as a clearinghouse. BCEL compiles quarterly reports of activities in business, publishing, and education related to literacy programs and publishes a newsletter. The council also produces other research compilations and monographs.

National Alliance of Business, Inc.
1201 New York Avenue, NW
Seventh Floor
Washington, DC 20005-3917
(202) 289-2889

The National Alliance of Business (NAB) works to increase private-sector training and job opportunities for lower-income and unemployed groups by developing partnerships among business, government, labor, education, and community groups. NAB provides training and technical assistance and maintains a clearinghouse for information on job training, education, and welfare programs.

National Center on Adult Literacy (NCAL)
University of Pennsylvania
Graduate School of Education
3700 Walnut Street
Philadelphia, PA 19104-6216
(215) 898-2100

The National Center on Adult Literacy conducts research on issues such as the motivation of adults, retention in literacy programs, family literacy, workplace literacy, English as a second language, and skills and program assessment. Research results are disseminated through a newsletter, technical reports, commentaries, responses to requests, and a literacy technology laboratory. The center also works directly with adult educators to improve instruction.

National Center for Family Literacy
401 South fourth Avenue
Suite 610
Louisville, KY 40202
(502) 584-1133

This center supports family literacy by providing training and technical assistance to developers of new family literacy programs, providing information to policymakers, developing materials disseminated through a newsletter and a clearinghouse, funding model programs, and conducting research.

National Clearinghouse on Literacy Education for Limited English Proficient and Out-of-School Youth (NCLE)
Center for Applied Linguistics
1118 22nd Street, NW
Washington, DC 20037
(202) 429-9292

The National Clearinghouse on Literacy Education, an adjunct ERIC clearinghouse, locates, abstracts, and enters literacy education documents into the ERIC data base. In addition, NCLE provides

technical assistance for the design of programs, curricula, and materials and for assessment of program and training of trainers. NCLE produces a directory of literacy programs.

Office of Educational Research and Improvement (OERI)
Office of Research
U.S. Department of Education
555 New Jersey Avenue, NW
Washington, DC 20202-5573
(202) 299-2079

OERI supports research, evaluations, and analyses of federal, state, and local education policies and disseminates research information to national and state policy makers and the education community.

Secretary's Commission on Achieving Necessary Skills (SCANS)
U.S. Department of Labor
Room C-231B
200 Constitution Avenue, NW
Washington, DC 20210
(202) 523-4840

The Department of Labor established the Secretary's Commission on Achieving Necessary Skills to determine skills needed for employment, acceptable levels of proficiency, and approaches to proficiency assessment. Researchers have interviewed employers and employees and analyzed job skills; expert panels have provided guidance. A resulting report has been widely disseminated.

Office of Vocational and Adult Education, Division of Adult Education and Literacy
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202-7240
(202) 732-2270

This division administers Federal adult education grant programs, provides advice on adult education issues, and coordinates policy for improving adult education programs.

Chapter 10

Preparing for Work: Vocational-Technical Education

Current Thinking

Context

Vocational education is an important part of high school for many students, accounting for almost one-fifth of all high school coursework. Almost all high school students take at least one vocational education course. Although students with no plans to attend postsecondary education take the most vocational education--an average of approximately six credits--the typical graduate planning to attend a four-year college takes over three credits in vocational education (Tuma et al. 1989).

Many students leave high school without acquiring sufficient skills in any one occupational field, to enable them to find a well-paid, stable job with career potential. While a large proportion of the future employment opportunities in the labor market will continue to be in jobs that require less than a baccalaureate education, the skills required will be substantially greater and more complex than in the past (Johnston and Packer 1987). To qualify for future employment opportunities and career development, high school programs must include basic and higher-order academic skills in a coherent sequence of academic and vocational education courses leading to an occupational field (Bottoms and Presson, 1989).

Efforts to integrate academic and vocational education have been in the forefront of learning methods that connect the content taught in math, science, or English and the application of these skills to real life situations. These methods have attracted the attention of educators and businesses who are trying to find ways to link what is taught in schools to what skills are needed for work. In addition, there is some evidence that vocational education can strengthen the academic skills of students who take a limited number of academic courses. One recent study found that students who took math-related vocational education, but no high-level math courses, showed encouraging math achievement gains between grades 10 and 12 (Wirt et al. 1989).

There is also a need for employers to better understand the skills that young people bring to jobs (through portfolios as well as tests that show high school academic performance and occupational competencies), and for educators and employers to work together to improve jobs and advancement opportunities for young workers. Students who have supervised work experience and placement assistance are better equipped to make realistic, mature decisions about their future education and employment.

Improving the Content of Vocational Education

Several recent studies have identified many ways in which vocational education can be strengthened so that students acquire both basic and higher-order academic competence and the general or specific occupational training they need to be productive workers (e.g., Adelman 1989; Bottoms and Presson 1989).

Integration of Academic and Vocational Education. Vocational education courses need to expand significantly the emphasis on application of math, science, and communication skills that will provide

students with higher-level academic content and better serve students with different educational and work goals (Bottoms and Presson 1989). There are numerous approaches to integrating academic and vocational education, including revision of curriculum materials to incorporate more academic content in vocational courses and team teaching by vocational and academic teachers. A thematic or "academies" model is one of the most widely replicated forms of academic/vocational integration. These schools-within-a-school focus on a cluster of occupations (such as electronics or health care) and coordinate academic and vocational coursework, using, for example, special projects that cut across classes (Grubb et al. 1991).

Methods of integrating academic skills in vocational education courses may well provide a model for effective applied learning throughout the curriculum. Ethnographic study of vocational classrooms shows that instructional approaches used in these settings offer opportunities for hands-on, project-based learning through trial and error, analysis of problems and development of alternative solutions, task management, cooperation, and reflection (Stasz et al. 1990). Training for both academic and vocational teachers and creating better channels for communication between departments are critical for improving the entire high school curriculum (Adelman 1989).

Workplace Competencies. The recent Secretary's Commission on Achieving Necessary Skills (SCANS) report outlines five competencies critical to effective job performance: (1) managing resources, (2) working with others, (3) acquiring and using information, (4) understanding complex systems, and (5) understanding a range of technologies. These skills can provide a basis for curriculum reform and test development in vocational-technical areas. Increasing the link between what is learned in school and what the workplace requires will increase the interest of many students in learning, boost business and community support for schools, and enhance the competence of the work force (Secretary's Commission on Achieving Necessary Skills 1991).

Competency-Based Curriculum. Little is known about how well students learn the occupational skills they are taught in vocational-technical programs. Except for a few vocational subfields that have standardized exams (e.g., auto mechanics' training, cosmetology), there are few national, standardized tests of occupational knowledge or competence. Competency-based instruction in occupational skills not only permits students to go at their own pace, but facilitates identification of areas where individual students may need extra help. Graduates of a program can obtain competency certificates to show potential employers precisely what occupational skills they have mastered. A competency-based approach in which courses are geared toward industry skill requirements could also encourage youth to acquire the requisite skills and guide their progress through a career (U.S. General Accounting Office 1990).

Greater Structure in Vocational Education Curriculum

Transcript studies reveal that high school students do a considerable amount of "shopping around" within the vocational curriculum (Tuma et al. 1989). Many students pick and choose from course offerings, sampling occupational content rather than acquiring sufficient skills in any one occupational field. Research on vocational training at the secondary and postsecondary levels shows that students taking a coherent sequence of vocational course work are more likely to get jobs related to their training than are students earning similar credits in a less structured fashion (Wirt et al. 1989).

Tech-Prep Programs. Designed to make technology-based vocational education as attractive as traditional college-prep courses, "tech-prep" programs are a promising approach to restructuring high school curricula (Nothdurft 1991). Federal vocational education policy now includes a specific

set-aside of funds to foster the further development of four-year tech-prep programs leading to an associate degree in a technical field of work (Stern 1991).

Tech-prep programs include a planned sequence of high school academic and vocational courses articulated with a postsecondary program. This coordination ranges from simple agreements whereby community or technical colleges grant credit or advanced standing for completing high school vocational courses, to systematic secondary and postsecondary programs in technical fields that begin with applied science or math courses in high school and end with a two- or even a four-year technical degree. Specific forms vary from "2 + 2" programs (junior and senior high school years plus community college) and "4 + 2" programs (high school and community college) to "2 + 2 + 2" program (junior and senior year, community college, last two years of four-year college).

Linking Education and Work Experience

Completion of a high-quality vocational education program develops occupational skills that qualify youth for well-paid, stable jobs with career potential. Many students who do not enroll in postsecondary education initially work in jobs that either require little or no training (in areas such as fast food or retail sales) or require skills unrelated to their high school training (Wirt et al. 1989). An important component of vocational education is the opportunity to participate in programs such as work-study or school-to-apprenticeship training that provide students with on-the-job learning for credit or pay in their field of study.

School-Business Partnerships. Close collaboration between schools, businesses, and community-based organizations benefits all parties. Employers can help develop vocational education programs which meet their needs and for which there are employment opportunities in the community. Employers can provide in-service training for teachers and equipment to support the program's coursework. Mentor activities give youth positive role models for success and encourage students to plan for the future by providing information on possible careers and expectations of employers. By providing work-study/apprenticeship opportunities and job placement for graduates, employers are able to participate in the training and observe the personal characteristics, work habits, and occupational skills of potential employees.

Apprenticeships. On-the-job training, broadly defined, provides the most direct route to meaningful employment for youth who are not headed for full-time postsecondary education (W. T. Grant Foundation Commission 1988). Participation in apprenticeship programs enables youth to broaden the base of their education in applied settings and mature gradually in the company of adults who take an interest in them (Nothdurft 1991). Work experience is particularly important for providing disadvantaged youth with information about potential jobs and careers, employed-adult role models, and observation of the importance of employability skills or a "work ethic" (Reisner and Balasubramaniam 1989).

An apprenticeship program includes a systematic mix of academic and vocational instruction in secondary and postsecondary schools with employment-based training for students--at a level of quality sufficient to certify the ability of individuals to perform entry-level tasks in skilled occupations capably and professionally. An apprenticeship must provide genuine opportunities for workplace learning, with training wages paid by employers, and result in recognized credentials (Nothdurft 1991).

Job Placement Services. Job placement services for graduates of vocational education programs that help them locate stable, well-paid work with career potential are important in overcoming the

problems many youth encounter in making the transition from school to work. Particularly in economically depressed areas where there are few job opportunities, vocational education programs must be developed to meet local employment needs and regular contacts must be established with employers to provide job placement services.

Skills Clinics. Access to continuing education enables workers to upgrade their job skills as necessary in order to stay employed and develop their careers. Skills clinics refer workers to education and training programs and provide workers with information on job openings that match their skill levels. Ideally, skills clinics are located in worksites and in communities that are near large numbers of workers. The skills clinics should continuously update literacy, numeracy, occupational, and technical skill requirements for specific kinds of jobs. The clinics need appropriate assessment instruments and test-taking facilities for evaluating workers' skills against skill requirements for specific jobs.

Performance Standards

Performance standards are a critical part of efforts to improve the quality of vocational education programs. Current federal policy seeks to establish a system of state and local accountability in vocational education, mandating states to establish performance measures and standards for secondary and postsecondary vocational programs, to track the implementation of the accountability system in school districts and institutions, and to take action when districts fail to demonstrate adequate progress in meeting their goals. Vocational education performance standards should include outcomes related to program completion, attainment of appropriate levels of occupational competency, and labor market performance (Goodwin 1991).

Directions

There is growing recognition that successful preparation of youth for work depends on effective partnerships between academic and vocational educators, between secondary and postsecondary educators, and between educators and employers (Stern, 1991). Within the high school, developing more effective programs requires a new partnership between academic and technical teachers. Business leaders have gone on record that they consider knowledge and skill in academic subjects--reading, writing, math, and science--to be the first priority in education for work. In other words, the academic curriculum that has been considered necessary for college-bound students is now seen as essential for work not requiring a college degree.

Effective programs for preparing youth for work must be able to use worksites as locations for learning. Employers need to set-aside jobs as training positions, making allowances for trainees' lower productivity and increased demands on supervisors. Schools need to provide staff to supervise this on-the-job training and help students learn from their work experience.

Suggested Reading List

Adelman, N. 1989. The Case for Integrating Academic and Vocational Education. **Washington, DC: National Assessment of Vocational Education, U.S. Department of Education. February.** Discussion of the degree to which innovative approaches to integrating vocational and academic education are grounded in research on the learning process, including findings from five case studies of approaches to academic and vocational integration in secondary schools.

Bottoms, G., and Presson, A. 1989. Improving General and Vocational Education in the High Schools. **Atlanta: Southern Regional Education Board.** Discussion of the need for and recommendations to improve general and vocational education in high school.

Goodwin, D. 1991. Beyond Defaults: Indicators for Assessing Proprietary School Quality. **Washington, DC: U.S. Department of Education.** An review of alternative indicators of school performance that are currently used or could be used by the federal student aid programs.

W. T. Grant Foundation Commission on Work, Family, and Citizenship. 1988. The Forgotten Half: Pathways to Success for America's Youth and Young Families. **Washington, DC. W.T. Grant Foundation. November**. Report on the demographics, employment, and earnings prospects of young adults who do not enroll in college. Recommendations are included to improve the education and training opportunities for this group.

Grubb, W., G. Davis, J. Lum, J. Plihal, and C. Morgaine. 1991. The Cunning Hand, The Cultured Mind: Models for Integrating Vocational and Academic Education. **Berkeley: National Center for Research on Vocational Education, University of California. July.** Description of models for integrating academic and vocational education based on case study observation of how high schools have changed their curricula and restructured their program and course offerings.

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Examples of Promising Projects

The Applied Academics Program: Montgomery County (Ohio) Joint Vocational School

Purpose: To integrate academic and vocational instruction.

Description: The applied academics program at the Montgomery County (Ohio) Joint Vocational School (JVS) was established in 1985 in response to the need to give students a more rigorous academic background. By integrating applied academics more directly into vocational instruction, the program extends the school's regular academic course offerings beyond the requirement that all students must take one unit of English in their junior year and one unit of social studies in their senior year in order to meet graduation requirements. Academically certified and vocationally certified instructors team-teach courses in communications, mathematics, and physics, emphasizing job-related competencies and skills. Because only juniors and seniors are eligible to attend JVS and few continue with further education or training, the applied academics program provides students with a strong foundation for entry-level employment. Over the past six years, applied academics have been infused into more than 80 percent of the school's 49 vocational programs.

The program's curriculum is developed by teams of teachers who develop and find appropriate materials, problem-solving activities, and exercises that define the links between vocational training and the academic skills being taught. Typically, the applied academic skills taught in mathematics and communications courses have been drawn from the vocational curriculum and competency list established by business and industry personnel, as well as from the observations of academic teachers as they become more familiar with the requirements of the various jobs and work situations open to their students upon graduation.

Teacher cooperation and interaction are basic elements of the applied academics program. Both academic and vocational teachers are required to be in the classroom during the academic instruction. Academic teachers observe in both vocational classrooms and at actual worksites in order to gain a better understanding of vocational applications relevant to their areas of expertise.

Why It Is Promising: The program provides students preparing to enter the labor market with occupationally related communications, mathematic, and science application skills necessary for the current and future labor market.

Costs: The overall cost for the applied academics program is approximately $1 million per year. The salary of the academic teacher is assumed as a local expense.

Evaluation: The academic program is evaluated by the North Central Association and the Ohio Department of Education's Division of Vocational Education.

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A. Philips Randolph Skills Center, Philadelphia

Purpose: To train students for jobs that are available in the community in fields that offer the potential for advancement and to enable students to obtain desirable jobs without postsecondary vocational training.

Description: The A. Philip Randolph Skills Center, in the Philadelphia School District, has a competency-based vocational education program with business/industry interaction. Students generally begin their vocational program in the 10th or 11th grade. To complete a vocational concentration, students usually need nine vocational education credits, which, added to their academic credits, results in a total of 25 credits for graduation from their home high school.

Students take academics in their home high schools and vocational education at the center. Students attend the center full-time every other week, thus allowing students to "work" a full workweek. To the extent possible, instruction is organized to simulate real work. Alternate weeks are spent in academic classes at the home school. In addition, certain "live shops"--baking, restaurant practice, cosmetology, printing, construction, automotive, fashion design, and medical record secretarial jobs--provide opportunities for students to do real work for neighborhood nonprofit organizations.

Instruction at the Randolph Skills Center is competency based. Students work at their own rates, with teachers establishing the overall percentage of competencies that must be achieved for marking purposes. Teachers and cluster coordinators strongly believe that competency-based instruction is the best model for teaching occupations skills, because it permits students to go at their own pace and because such instruction facilitates identification of areas in which students may need extra help. The center's curriculum was adopted from Mid-America Vocational Curriculum Consortium (MAVCC), which is a consortium of midwestern states that invests considerable resources in curriculum development and market curriculum and instructional materials to nonmember states.

Seniors who have a B average in all coursework, including academic courses, and recommendations from their shop teachers are eligible to participate in cooperative education. The co-op coordinator places students in jobs, visits each student at the worksite approximately monthly, and teaches a classroom component of the program which the students attend monthly. Juniors are permitted to start co-op during the last report period of the year, so that they can be placed in a job during the summer that they will be able to continue during their senior year.

Randolph's guidance counselors work with each senior in developing a plan specifying the student's intentions for enrolling in postsecondary institutions or obtaining employment following graduation. During their final semester, counselors monitor students' progress in gaining admission to postsecondary training or in job search activities.

Why It Is Promising: To support the competency-based instruction, the center has developed a computerized system for recording students' achievement of task competencies. Graduating seniors can obtain these competency certificates for use during their job search to show potential employers precisely what they can do. For example, an auto mechanics student could be certified as competent in removing and replacing the fuel pump, cleaning the carburetor, removing and replacing the oil pump, installing a carburetor, removing and replacing the oil pan, and replacing the flywheel.

Evaluation: The Randolph Skills Center has had a placement rate of approximately 80 percent among its vocation education program graduates. The target is an 85 percent training-related placement rate.

Additional Information: Students attend Randolph if they choose a program that is not available at their home high school; in other words, Randolph operates as a desegregated magnet school. In the 1990-91 school year approximately one-fifth of the students at Randolph were from parochial schools.

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High Schools That Work: The Southern Regional Education Board (SREB)

Purpose: To integrate academic and vocational education in high school.

Description: The High Schools That Work initiative, which is intended to improve achievement in mathematics, science, and communications for students in general and vocational programs by integrating academic and vocation education, is being pilot-tested in more than 30 high schools and area vocational centers by member states of the Southern Regional Education Board (SREB). The program aims to establish higher expectations of students in both academic and vocational classes and to narrow by one-third the achievement gap between college preparatory and other students in reading, mathematics, and science as measured by the National Assessment of Education Progress (NAEP). Courses are being revised and developed to teach essential mathematics, science, and language arts through an applied process for students in vocational and general programs.

Students are required to complete a structured and coherent program of study that includes three courses each in mathematics and the sciences. At least two credits in each area must be equivalent in content to courses offered in the college preparatory program. Students must also complete at least four courses in a vocational major and two courses in related areas. Teachers in both academic and vocational areas receive staff development materials, and time is allocated for them to work together on curriculum and instruction. Guidance and counseling services are provided to help students see the connection between what they are learning in school and their goals beyond high school and to get their parents involved in the process of planning and annually updating a high school program of study.

Why It Is Promising: High school general and vocational curriculums are linked to produce a coherent and challenging program of study. Regular student assessment and program evaluation information is used to check and improve the effects of curriculum, instruction, school climate, and school organization and management on student achievement.

Evaluation: After participating in the program for two years, students at 17 of the 28 original pilot sites showed significant improvement in NAEP reading, mathematics, and science scores. Between 1988 and 1990, the eight sites that had made the greatest gains in achievement--and the most progress in integrating college preparatory studies with vocational studies--closed the average achievement gap

scores in science by 93 percent, in reading by 76 percent, and in mathematics by 36 percent. Moreover, by comparing high-achieving sites with low-achieving sites, SREB found that school attitudes toward "noncollege bound" students and their coursework are more important in determining their achievement than is their socioeconomic background.

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High Technology Magnet, Pittsburgh, Pennsylvania

Purpose: To provide integrated, applications-based technical and academic training at the secondary level.

Description: The High Technology Magnet has an interdisciplinary, four-year curriculum that emphasizes integration of academic and technical instruction in the teaching of advanced electronics. The program is organized into two "strands": (1) the professional strand, intended to prepare students for college in engineering or other technical fields, and (2) the technical strand, intended to prepare students for postsecondary vocational training or entry-level employment.

In the 9th grade the curricula for the two strands are identical. After the 9th grade the professional and technical strands diverge, with the professional strand incorporating more electives to permit students to take courses such as foreign language in anticipation of entering college. Overall, college-bound students take fewer technical courses than students enrolled in the technical strand. The technical strand has no electives in the 10th and 11th grades.

The guiding principle for the curriculum is full integration of academic and technical components, with the academic curriculum--particularly English, math, and science--organized to support and reinforce the flow of the technical curriculum.

The 9th grade introduction to technical writing is an excellent example of integration of the academic and vocational sides of the English curriculum. Students are assigned a writing project requiring them to describe the nature and workings of a piece of equipment (preferably but not necessarily electronic). Their compositions are checked for technical accuracy by their electronics lab instructor and for grammar and composition by their English instructor. The students complete the composition in computer lab using the keyboarding and word processing skills they are learning in computer literacy class.

Why It Is Promising: The High Technology Magnet is a vocational/technical program specifically designed for students planning to attend college or to enroll in postsecondary vocation training.

Evaluation: Even though many graduates were officially enrolled in the technical strand, most have gone on to college. Of the 27 students expected to graduate in 1988, 15 were planning to enter a

four-year college, 4 others were enrolling in a postsecondary proprietary school, 3 were entering the military, 3 were going to work, and 2 were undecided.

Additional Information: The High Technology Magnet is one of two programs at Schenley High School Teacher Center implemented in 1983 under the city's voluntary desegregation plan. The second is an international studies program for academically talented students. The school also benefits from the assignment of the system's best teachers for the purpose of attracting the mix of students necessary to meet desegregation goals.

Costs: The High Tech Magnet has been funded through a combination of school district and federal magnet funds. At the outset, approximately $160,000 was spent on equipment for the high-tech labs. Additional funds are necessary for teachers to develop curriculum, to plan the program, and to pay for student field trips and other program-related activities. Private employers have donated equipment, provided speakers, and given teachers (particularly the academic instructors) opportunities to observe operations in the workplace before they developed courses and curricula.

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Community College of Rhode Island 2+2 Tech Prep/Associate Program

Purpose: To provide an alternative path of study for high school students who are enrolled in general education or vocational programs.

Description: The 2+2 Tech Prep/Associate Degree program was established in 1987 at the Community College of Rhode Island (CCRI) to provide an alternative program of study for high school students who were enrolled in general education programs. Twenty-one of the 39 high schools in Rhode Island participate. The program begins in the 11th grade, when students enroll in a focused curriculum in science (principles of technology), math, and communications--all taught in an applied setting using a hands-on, practical approach to learning. These courses prepares students to pursue a postsecondary technical training program and, subsequently, a career in a technical field. High school students visit the CCRI to learn more about the technical, business, and allied health programs offered. The program culminates with an associate degree at CCRI.

CCRI conducts workshops and in-service training for teachers in teaching applied courses at the high school level. In addition to the partnerships that have developed between the community college and participating high schools in the state, a partnership between the business community and the college has been fostered. With assistance from local chambers of commerce, a mentor program has been established to provide students with positive adult role models, guidance, and support, and to inform students about career opportunities in a number of fields.

Why It Is Promising: The CCRI 2+2 program was selected as one of only three community colleges nationwide to receive a new tech prep/associate degree award for program excellence from the American Association of Community and Junior Colleges.

Evaluation: A survey of participating high schools shows that 94 percent of seniors enrolled in the program in 1990-91 graduated from high school. Of those graduates, 57 percent enrolled at CCRI, 6 percent enrolled at other two-year schools, and 11 percent enrolled in four-year schools; 10 percent entered the military and 6 percent began employment. The schools were unsure about the placements of the remaining 10 percent.

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WORKLINK, Tampa, Florida

Purpose: To provide an information service for employees that would (1) improve communication between school and employers, (2) offer new information about students' school performance and thus encourage employers to use the service, (3) increase students' incentives for learning, and (4) ease students' transition for school to work.

Description: WORKLINK, an initiative of Educational Testing Service (ETS) that is offered in cooperation with the National Alliance of Business, the National Urban League, and the American Business Conference, is an information service for employers in recruiting and hiring student entry-level workers. WORKLINK helps employers match needed entry-level skills with the skills of students entering the workforce, and provides employers with electronic access to a data base record of student school performance in a format useable to employers.

Unlike the traditional high school transcript, which employers often find difficult to obtain and interpret, a WORKLINK record contains a reformatted school transcript that provides easily understandable information on courses and grade-point average for grades 9-10 and 11-12. The WORKLINK record also provides confidential teacher ratings of students' work habits, assessments of students' workplace skills (reading manuals, applied math, writing), and students' training and work experience.

Students build a WORKLINK record though all four years of high school, and, to some extent, they control their own records. The WORKLINK concept, for example, allows students to request ratings from their teachers as they choose, set conditions for use of their records, and determine which sections in the record (e.g., assessments, reformatted transcripts) should be included or omitted. The WORKLINK concept is not tied to any one curriculum or academic program but is designed to serve all students and to support improved performance in any program. Students' WORKLINK records are entered into local and regional data bases that employers in the areas can tap to find entry-level candidates.

While WORKLINK is an initiative of Educational Testing Service, it is not an ETS-owned product. WORKLINK can be implemented in any locality, with or without ETS assistance. The WORKLINK program was piloted-tested in Tampa, Florida, and has received overwhelming support from the

Tampa community. The Pasadena, California, schools also have begun to implement a WORKLINK pilot program in conjunction with their academy programs.

Why It Is Promising: WORKLINK addresses the school-to-work transition problem. It not only helps employers find the best possible student candidate for employment, but also helps students see that their school performance counts. In permitting students to have some degree of control over what information is contained within their WORKLINK record, the program emphasizes individual responsibility.

Costs: The activities required for WORKLINK are fairly well defined, but whether the cost of each of these activities is considered a separate line item, with distinct costs, is not clear. Basic WORKLINK activities include student assessment (generic and specific skills), compilation of confidential teacher ratings, biographic data and other record components, and reformatting transcripts. This school-based work can be incorporated into the activities of a teacher's normal work day and, therefore, not shown as a separate line item, or these activities can be itemized as added costs. In Tampa, for example, these activities were considered part of teachers' regular responsibilities, and therefore no extra costs were incurred. Data entry and employer access were handled at a modest cost, $4 and $2 per record, respectively.

Evaluation: The WORKLINK program is evolving, and no evaluation has been undertaken at this point.

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Florida Employment Training Placement Information Program

Purpose: To assess the performance of vocational programs delivered by public institutions.

Description: Mandated by the Vocational Placement Standard Law enacted by the state of Florida in 1984, all public vocational education in the state is now performance based, and programs are required to maintain a 70 percent training-related placement rate over a three-year period in order to retain state funding.

Information to assess performance comes from the Florida Employment Training Placement Information Program (FETPIP), which uses state data on wages along with information provided by institutions to determine the performance of all publicly funded vocational programs in the state. The first step in FETPIP is to obtain, each year, the names and Social Security numbers for all persons who complete or leave each of the schools that provide vocational programs, including former inmates who received vocational training from the Department of Corrections. This information is then matched with that of other agencies to identify persons who are continuing their education, those who have enlisted in the military, those who are working for the Postal Service or federal government, and those who are working for employers covered by wage records.

FETPIP then develops lists containing names and Social Security numbers of the people who are employed and sends the lists to employers, who verify the occupation and location (county) of the persons they employ. FETPIP then determines whether the employment is training related. FETPIP is able to locate and determine the relatedness of the training for about 87 percent of the students who complete and leave training. The lists are returned to the schools for additional follow-up to locate completers and leavers who have not been identified by FETPIP.

FETPIP develops an annual report as well as other reports to support policy, planning, and compliance-related activities by the Department of Education. Compliance reports go to the districts and community colleges twice a year.

Why It Is Promising: Because state education officials have been able to work out cooperative agreements with a variety of state and federal agencies, FETPIP collects information on training-related placement that is substantially more comprehensive than the information obtained through the wage data system alone. Consequently, in addition to its primary function of tracking vocational program performance, the information is useful for investigation of labor market trends, which in turn can be useful for making decisions about the appropriate location, distribution, and content of training programs. Furthermore, the system supports a variety of special studies that are useful to program planning and management, for example, a study to establish the income return on associate of arts degrees from a community college.

Costs: FETPIP is much less costly than earlier systems that attempted to collect analogous information. In past years, when local education agencies collected information on placements for vocational programs, the cost averaged $17 per student and the response rate was typically around 20 percent. FETPIP costs less than $3 per student and routinely achieves a response rate approaching 90 percent.

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Adult Postsecondary Occupational Vocational Program: Greater Lowell (Massachusetts) Regional Vocational-Technical School

Purpose: To provide occupation-specific retraining and placement services.

Description: Established in 1978, the Adult Postsecondary Occupational Vocational program in Greater Lowell, Massachusetts is an intensive adult retraining program for careers in computer technology, business technology, drafting technology, and electronics technology. The program enrolls approximately 400 adults each year. With more than 25 extensively equipped vocational shops and state-of-the-art computer and electronic equipment, the technical school is the largest vocational training facility in New England

The program makes a concerted effort to reach the people most in need of training. Program staff work together with staff from the Job Training Partnership Act (JTPA) programs, the Department of

Public Welfare, Massachusetts Rehabilitation Commission, Worker Assistance Centers, the Displaced Homemaker Centers, and other agencies in the state to recruit applicants. Half of the student slots are reserved for economically disadvantaged adults.

Instructional facilities are used for 50 hours weekly, including 20 hours of structured, hands-on lab work. Two training cycles per year allow students, who are employed or have young children, the option of participating in the program part-time over two semesters. Training is conducted outside regular schools hours to minimize costs and to permit business and industry professionals to serve as vocational educators. The program uses team teachers and individualized instruction. All training includes generic instruction in computer concepts and operations and word processing.

Why It Is Promising: The comprehensive job-specific program trains participants to above entry-level competence, and places them in employment in their field within 90 days of training and completion of the program. Graduates are eligible for up to 24 credits toward an associate degree in electronics technology. In addition, the program works with participants after they graduate for up to one year. This program has established partnerships with corporate leaders from the high-tech industry and insurance companies, which provide equipment and instructors for the program, and jobs for students after they complete the program.

Evaluation: An advisory committee composed of high-tech executives, area business leaders, and public-sector officials, meets regularly to monitor program operation; the committee also regularly reviews the curriculum and suggests modifications as required by rapidly changing technologies.

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Aviation Maintenance Technology Program: Thief River Falls (Minnesota) Technical College

Purpose: Provides opportunities for high school graduates to obtain training and for certified technicians to update their knowledge in aviation mechanics.

Description: The Aviation Maintenance Technology (AMT) Program, located at Thief River Falls Technical College, Thief River Fall, Minnesota, was established 30 years ago. Currently 450 students, ranging in age from 18 to 40, are enrolled in the AMT program. Students who complete the two-year program receive an associate degree in aviation maintenance technology and may enter the program at the University of North Dakota, where they can earn a baccalaureate degree in airway science maintenance management.

Students are actively recruited to the program by Technical College staff, who visit high schools, contact job service offices, attend career night functions, distribute catalogues to area schools, and follow up on any student inquiries. The college currently has three hangars, eight helicopters, nine fixed-wing reciprocating engine aircraft, two turbo prop aircraft, two jet aircraft, and five modern engine test cells. The curriculum integrates general-purpose knowledge--physics, algebra,

engineering, computers--with job-specific knowledge related to jet engines. The 23 licensed teachers in the program are required to have a minimum of three years' experience working as an aviation mechanic. Moreover, the AMT program has a partnership program with Northwest Airlines, which provides additional instructors to set up demonstrations of aviation maintenance for students at the college using state-of-the-art technology.

Why It Is Promising: There is a 100 percent placement rate of graduates from the program, who receive offers of employment from major airlines such as Northwest, United, and Delta. The program is making an effort to recruit and train women to become airline mechanics.

Costs: Funding for the program is approximately $365,000.

Evaluation: Every five years this program is evaluated by the State Board of Technical Colleges, which has representatives from the major airlines assess the facilities and equipment used, curriculum, and instructional methods. All evaluation findings have been favorable.

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Child Care Program: Kiamichi Area (Oklahoma) Vocational-Technical School

Purpose: To train child care workers in order to meet local child care needs; to assess community and industry needs and provide appropriate child care training models.

Description: The Child Care Program at Kiamichi Area Vocational-Technical School is an innovative and comprehensive program that prepares high school and adult students for employment in the child care field through a combination of on-campus and off-campus industry training. On-campus training is provided in a classroom setting, complete with a model child development lab. A wide range of industry sites such as day care centers, day care homes, public school day care, Department of Defense centers, Head Start programs, church nurseries, and youth emergency shelters serve as off-campus training sites. The program has training sites in 14 towns in its service area.

The program serves approximately 100 students per year, including low-income adults and students bound for college as well as high-risk students, teen mothers, and high school dropouts. The program recruits high school students from 14 feeder schools and its postsecondary enrollment from the local and surrounding communities. Students are recruited through programs presented at feeder schools, local television announcements, open house and classroom tours, and newspaper articles.

Basic academic skills are integrated into the training and throughout the curriculum. The program incorporates reading, math, language, and science skills into the child care competencies necessary for teaching and directing children. Students progress through a sequence of basic core units, followed by individualized instruction based on each student's particular career choice. An open- entry, open-exit policy allows students to enroll at any time on a full-time or half-time basis. Secondary students

generally participate half-time while completing their high school requirements. The length of training depends upon the student's career goals and ability to develop basic competencies.

Off-campus instructional approaches include local television classes preceded and followed by onsite visits, individualized learning activity packets complemented by discussions, demonstrations, and audio-visual presentations.

Approximately 60 to 70 percent of all program graduates find employment in the child care field and enter the job market at a variety of positions including educational coordinator, teacher, director, and owner/operator. About 10 percent of program graduates enroll in continuing education programs.

Why It Is Promising: Over the past two decades, the Child Care Program at Kiamichi Area Vocational-Technical School has helped shape the delivery of child care services in southeastern Oklahoma. An important function of the program is to assess local community and industry needs and to offer training in response to newly emerging needs of the local communities. In addition, as the program has responded to inquiries from the business community seeking assistance in setting up child care for employees, the program has established links with the private sector.

Cost: Funding comes from state, federal and local funds. Although costs vary from year to year, the program cost averages $100,000.

Evaluation: The program makes use of the third-party evaluations conducted by the North Central Accreditation and Oklahoma Department of Vocational-Technical Education.

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Automotive Technology Program: Longview (Missouri) Community College

Purpose: To provide training in automotive technology for students who wish to enter the field, and to provide essential updated training for automotive technicians already employed in the field.

Description: Established in 1969, the Automotive Technology Program serves approximately 225 students per year. The program is a corporate cooperative partnership program with General Motors, Ford Motor Company, and Toyota. It offers short-term, high-tech industry and customized training for students and workers in the field, in addition to a two-year program that leads to an associate in applied science degree. Classes are offered days, evenings, and on weekends. Facilities include a recently constructed $1.7 million state-of-the-art high-tech center for automotive training. Students are referred to the program by vocational educational schools, and by industry after they begin employment.

Courses are taught by manufacturer-trained instructors. Instructional methods include a combination of lecture and directed laboratory experiences with a ratio of one hour of lecture to two hours of laboratory. Course-specific textbooks are used, in addition to laboratory manuals, service manuals,

and task-specific work sheets are used in the laboratory. Media materials include 640 videos and some 1,500 factory and service-trade volumes. Recommendations from advisory committees and cooperative work stations are used to review course content as skill requirements for industry employment change.

Why It Is Promising: This program is an excellent example of an industry-based partnership that serves two purposes:

1. The program meets the needs of workers currently employed in the field who need to upgrade their skills. (Each manufacturer requires several update seminars that all automotive technicians must take to keep their certification current, so that their warranty work in the dealship qualifies for factory reimbursement).

2. The manufacturers' dealers hire students who have completed the program but are not employed. (The program has a placement rate of 95 percent).

Costs: The program receives $162,640 from the state and $534,000 in local funds. The local amount includes $300,000 from corporate donations (cash, equipment, lab vehicles, teaching aides, and training).

Evaluation: The Missouri State Department of Education conducted an evaluation that considered teacher certification, update training, instructional methods used, curricular content, equipment and facilities and administrative and counseling structures; the evaluation was favorable to the program. In addition, the program must be recertified every five years by the National Automotive Technical Education Foundation and Automotive Service Excellence.

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Computer Integrated Manufacturing (CIM) Program: Valencia College (Florida)

Purpose: To train and update skills of specialists for jobs in industry that require less than a baccalaureate degree.

Description: The Computer Integrated Manufacturing (CIM) program at Valencia Community College was established in 1987 through a statewide competition that was designated by the Florida High Technology and Industry Council as a Program of Specialization in CIM and as a Center of Emphasis in Electronics. Since 1988, more than 2,000 students have taken one or more courses in this program, with 75 percent of the courses offered onsite with industry.

The CIM program has three tiers:

1. A degree track leading to an associate of science in electronic technology;

2. Custom-designed CIM educational programs that respond to the needs expressed by individual businesses; and

3. Opportunities to develop CIM skills for non-degree seeking persons who are employed or are seeking employment in the field.

The program meets industry training needs for highly skilled electronics technicians who are well prepared in math, physics, and digital techniques of machine control that will be operating and maintaining automated systems. These systems include programmable controllers, robotics, computer-aided drafting/design, production and quality control, and manufacturing operations. Valencia designed the CIM curriculum as a competency-based instructional program that meets the state of Florida's standards.

Why It Is Promising: The CIM training program serves as a model for other cooperative efforts within the state of Florida and nationally. Courses and instructional materials have been developed and a model training schedule has been determined. Valencia is a member of the IBM Higher Education Software Consortium, which provides access to nearly $1 million worth of business, engineering, and manufacturing software for use in training and technology transfer. Because of the strength of the CIM training program at the college, the Florida High Technology and Industry Council named Valencia a Technology Transfer Center in 1990, and awarded the college a grant to initiate technology transfer in CIM. The center serves 1700 primarily small and medium-size businesses and industries in the greater Orlando area that need help in adopting advanced manufacturing technologies that can be demonstrated to improve productivity.

Costs: Funding for the program comes from federal, state, and local sources. In 1990-91, federal grants totaled $494,000, while a state training grant provided $102,000, and a state grant to initiate technology transfer efforts in CIM provided $225,000. Industry contributed $587,000 in matching funds for federal and state grants awarded that year. Corporate donations of equipment are valued at $400,000 a year.

Evaluation: The CIM program undergoes quarterly evaluation by external and internal parties. The Industry Advisory Council for the Technical and Engineering Related Programs Department at Valencia reviews the curriculum and student performance. The committee also reviews equipment needs and makes recommendations for additions or upgrades. In addition, management representatives from Martin Marietta and Siemens-Stromberg Carlson evaluate the training provided onsite. Industry representatives from IBM meet quarterly with Valencia to review CIM training that uses the equipment and software donated by IBM. Students in each class provide written evaluations of their instructors and courses taken.

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Sources of Further Information

National Center for Research in Vocational Education
University of California, Berkeley
Graduate School of Education
Berkeley, CA 94720
(415) 642-4004

The National Center for Research in Vocational Education (NCRVE), funded by the U.S. Department of Education, is a resource for research and exemplary practice in vocational education. NCRVE has the following objectives:

1. To improve understanding of how work is changing and what these changes imply for increasing students' understanding of work opportunities and for improving the relationship between schools and workplaces;

2. To identify better educational strategies for preparing students for work, with special attention to integrating vocational and academic education;

3. To improve the articulation between secondary and postsecondary education and strengthen the ability of postsecondary vocational education to respond to an increasingly diverse student body; and

4. To improve the accountability of secondary and postsecondary education by enhancing assessment practices, improving methods for monitoring performance, and linking performance to public policy.

In addition, NCRVE performs various service functions for vocational educators and policymakers, including developing leadership, providing in-service education for state and local leaders in vocational education, disseminating research results, providing technical assistance to programs serving special populations, working with public agencies in developing methods of planning and evaluating programs, and acting as a clearinghouse for program improvement projects.

Center for Occupational Research and Development (CORD)
601-C Lake Air Drive
Waco, TX 76710
(817) 772-8756

The Center for Occupational Research and Development (CORD) is a nonprofit, public service organization that helps educational institutions and other organizations provide education, training, and retraining for America's technical workers. CORD provides a range of support services to secondary, postsecondary, and adult vocational and technical education. The center develops instructional materials that emphasize a hands-on approach for new and emerging technologies, applied academics, and worker retraining; organizes and manages networks and partnerships; supports schools, regions, and states in educational planning; develops strategies for training and retraining workers; analyzes workforce needs; conducts workshops; and helps schools develop 2 + 2 tech-prep programming. CORD has formed the National Tech Prep Network to encourage and facilitate

nationwide communication among educators, consortia, and business leaders involved in tech prep by publishing a monthly newsletter and holding national conferences; a monograph series is planned.

National Center on the Educational Quality of the Workforce
University of Pennsylvania
Institute for Research on Higher Education
Philadelphia, PA 19104
(215) 898-4585

The National Center on the Educational Quality of the Workforce is a consortium that seeks to coordinate the efforts of businesses, workers, and educational institutions to improve the American workforce through research, dissemination of results, and sustained dialogue among researchers, practitioners, and policymakers. The center's activities address a broad range of issues related to improving the American workforce, including school-to-work transition, international training and education practices, and the effectiveness of work-related training and education. Members of the consortium include the University of Pennsylvania's Wharton School and Institute for Research on Higher Education and Cornell University's New York State School of Industrial and Labor Relations.

American Association of Community and Junior Colleges (AACJC)
National Center for Higher Education
One Dupont Circle NW
Suite 410
Washington, DC 20036
(202) 728-0200

The American Association of Community and Junior College represents a network of 1,200 community, technical, and junior colleges, which provide access to high-quality higher education for millions of students. The association seeks to exert national leadership in support of community, technical, and junior colleges by identifying broad public interest challenges and assisting member colleges in responding to them. The association also acts as an advocate, develops linkages, and serves as a resource to help member institutions provide excellent opportunities in higher education.

American Vocational Association
1410 King Street
Alexandria, VA 22314
(703) 683-3111

The American Vocational Association (AVA) is a national professional organization for teachers, supervisors, administrators, and others interested in the development and improvement of vocational-technical education. AVA's mission is to provide educational leadership for the development of a competitive workforce. The organization publishes the Vocational Education Journal, a magazine covering issues and trends in vocational-technical education and association and legislative news; all members receive the journal as part of their membership dues. AVA also publishes the Vocational Education Weekly, a weekly subscription newsletter, covering legislative and other national news of interest to the field.

National Advisory Council on Work-Based Learning
200 Constitution Avenue
Washington, DC 20210
(202) 535-0540

Located within the Department of Labor's Employment and Training Administration, the Office of Work-Based Learning was established in 1990 to guide the efforts of several Labor Department units--the Bureau of Apprenticeship and Training, the Office of Trade Adjustment Assistance, and the Office of Worker Retraining and Adjustment Programs--to improve the quality of America's workforce by helping dislocated workers obtain meaningful jobs, young people move from school into productive careers, and current workers upgrade their skills. In addition, the office has a training policy unit, which encompasses research and demonstration programs and a resources center to help the private and public sectors identify and implement the latest in training technologies.

Institute on Education and Training
RAND Corporation
1700 Main Street
Santa Monica, CA 90407-2138
(213) 393-0411

Established in 1991, the Rand Corporation's Institute on Education and Training has three main functions: research, policy outreach, and training. As part of its research agenda, the institute examines broad issues in education (e.g., governance, finance, and accountability) that tend to affect policy at federal, state, and local levels. The institute also helps public and private decision makers develop and implement effective policies and programs. To meet the need for trained analysts, the institute plans to offer doctoral and postdoctoral programs through the Rand Graduate School of Policy Studies, short-term training programs for practitioners in the field, and a program for visiting scholars. In 1992 the association is focusing on a minority education initiative to help colleges adopt aggressive policies and practices to improve the recruitment, retention, and success of minority students and faculty.

Southern Regional Education Board (SREB)
592 10th Street NW
Atlanta, GA 30318-5790
(404) 875-9211

The SREB-State Vocational Education Consortium was formed to develop, apply, evaluate, and promote approaches to strengthen students' basic competence in communication, mathematics, and science, and their ability to think critically and to solve problems. To improve achievement in mathematics, science, and communications for students in general and vocational programs by integrating academic and vocation education, the consortium is piloting the High Schools That Work initiative in high schools and area vocational centers throughout its member states. The consortium publishes a newsletter, The Link, and has information on the key practices and strategies of the pilot program, case studies of implementation of the program in pilot sites, and a progress report on student outcomes.

Chapter 11

Drug Education and Prevention

Current Thinking

Context

Drug use by school-age youth reached near-epidemic proportions in the 1970s, when surveys showed that 65 percent of students had used an illicit drug and 93 percent had used alcohol by their senior year in high school. Throughout the 1980s, steady declines in the use of illicit drugs were recorded, and findings from the most recent survey of high school seniors show that fewer than one-half have ever used an illicit drug (Johnston, Bachman, and O'Malley, 1991; 1992).

For high school seniors, there is a strong correlation between reductions in current use (use in past 30 days) of marijuana and annual use of cocaine with increased perception of the risk of using these drugs (Johnston, personal communication, 1992). Despite the continuing trend of declining illicit drug use, school-age students continue to experiment with alcohol, cigarettes, and marijuana. According to data from the 1991 high school survey,

- Six percent of 8th-graders, 17 percent of 10th-graders, and 24 percent of 12th-graders had used marijuana during 1991.
- Fourteen percent of 8th-graders, 21 percent of 10th-graders, and 28 percent of high school seniors had smoked cigarettes in the 30-day period before the survey.
- Eighteen percent of 8th-graders, 40 percent of 10th-graders, and 53 percent of 12th graders reported getting drunk or very high during 1991.

Use of alcohol and other drugs is linked to academic failure, dropping out of school, youth suicide, and a host of adverse health consequences. The leading cause of death among young people between the ages of 15 and 24 is alcohol-related automobile accidents (DHHS 1987). Also, young adults constitute one of the fastest-growing populations of AIDS cases, many of whom contract the virus during their teenage years when sexual activity and drug use place them at considerable risk. (Gayle and D'Angelo 1990).

Drug use is also implicated in rising school violence and other criminal behavior. Frequent drug use is more common among youths who engage in chronic delinquent behavior than among other adolescents (Hawkins et al. 1987). In a recent study, the percentage of male juvenile arrestees/detainees testing positive for drugs at the time of arrest ranged from 10 to 31 percent in 11 cities where data were collected (NIJ 1991).

Risk and Protective Factors

Research does not point to a single causal factor to explain why children begin or continue using drugs (Jones and Battjes 1985; Kumpfer 1989). Rather, multiple factors seem to combine in ways that are not clearly understood to produce drug-using behaviors in some persons.

Many adolescents can be considered "at risk" for drug use because they have friends and acquaintances who use drugs or because they come from dysfunctional families. For example, 7 million young people under the age of 20 have an alcoholic parent and more than 2.5 million others are victims of abuse and neglect (National Committee for the Prevention of Child Abuse 1991). Developmental issues also place young people at risk, because they may see themselves as invulnerable, they lack social and decision-making skills, and they are inexperienced in withstanding the pressure of peers (Tobler, in press).

Initial attempts to identify correlates of youth alcohol and other drug use focused almost exclusively on demographic characteristics such as race, socioeconomic status, and sex that had little practical relevance for the development of prevention programs (Kumpfer 1989). Many promising programs now address both risk and protective factors that appear to increase or decrease the risk of drug use (Hawkins et al. 1986). Conditions that appear to increase the likelihood that youth will use drugs include the following:

- Community laws and norms favorable toward drug use;
- Availability of drugs, including alcohol and tobacco;
- Family problems, including a history of alcoholism or other drug abuse;
- Parental drug use and positive attitudes toward use;
- Academic failure;
- Lack of commitment to school;
- Antisocial behavior in late childhood and early adolescence; and
- Friends who use drugs or sanction use.

Protective factors associated with reduced risk of drug use include the following:

- Clear norms and standards of behavior in the home, school, and community;
- Perceived personal risk of using drugs;
- Development of skills to resist social influences, solve problems, and make decisions;
- Attachments to family, school, and community; and
- Opportunities for involvement in alcohol- and drug-free social and recreational activities.

Prevention Program Strategies

Strategies to prevent or delay the onset of drug use by young people have typically been school based and have involved one or more of the following types of programs:

Knowledge only. These programs focus on providing information about the consequences of alcohol and other drugs, frequently in ways that emphasize the most extreme consequences of drug use. While some knowledge gains have been noted, these programs show only negligible changes in attitudes toward drugs and in actual use of drugs (Tobler, in press; Moskowitz 1989).

Affective only. Psychological factors thought to place children at risk form the core of these programs, which stress examination of personal beliefs, values, and decision-making patterns with no specific references to drugs. Affective-only programs have been shown to be ineffective across all outcome measures (U.S. Department of Education 1987).

Social influence. These programs have two integral parts: (1) instruction and practice in the use of communication and decision-making skills to resist offers of drugs and (2) group activities that promote peer support for not using drugs. While there is some evidence to suggest that the social

influence approach has achieved lower rates of alcohol, tobacco, and marijuana use, additional research is needed to explore the effectiveness of this approach longitudinally and for different substances (Ellickson and Bell 1990; U.S. Department of Education, in press).

Alternative Activities. These programs promote the involvement of youth in recreational and academic activities that increase personal competence and take place in an alcohol- and drug-free setting. The activities include peer tutoring, adult mentoring, job skills training, and physical adventure.

Directions

Programs to prevent use of alcohol and other drugs were originally offered primarily to high school students. Now many schools provide programs that seek to develop resistance and social skills in students in junior high and middle school. Until recently, few programs focused on elementary-age students. However, evidence suggests that some children start experimenting with drugs as young teens and that, if use can be delayed, youth are less likely to become regular or heavy users of alcohol and other drugs (Kandel and Yamaguchi 1985; DHHS 1991). Thus providing consistent prevention messages throughout the K-12 years has become an important element of school-based prevention programs.

Overall, changes in prevention research over the past decade reflect a growing understanding that drug use refers not to a single problem but to an array of problems. Consequently, a consensus is developing that programs that rely on a single approach have, at best, limited impact on reducing drug use (William Bukowski, personal communication, 1991). While no drug prevention program can assure that children and youth will not use alcohol and other drugs, programs that are comprehensive (i.e., those involving schools, parents, community groups, social service agencies, law enforcement, and religious groups in prevention efforts) are more likely to offer the most promise for preventing or reducing student drug and alcohol use (Pentz et al. 1989; U.S. Department of Education, in press).

Recommendations for establishing comprehensive K-12 prevention programs (Kumpfer 1989; U.S. Department of Education 1987; Tobler in press; Hawkins et al. 1986) include the following:

- Enlist the support and cooperation of families and the community, and coordinate school policies and programs with prevention, treatment, and enforcement efforts in the community.

- Recognize that "one size does not fit all" and that programs for youth engaging in abusive or compulsive drug use should be different from those offered to young people who are likely to remain drug free.

- Develop, implement, and enforce school policies that convey a consistent no-use message.

- Begin prevention programs in prekindergarten and kindergarten and provide special intervention services to children and their families to strengthen protective factors at home and in the community.

- Use developmentally appropriate and culturally sensitive programs that meet the needs of students and their families in the communities in which programs and services are offered.

- Choose or modify curricula based on needs assessments that identify the knowledge and attitudes of students, the number of students who may be using drugs, the types of drugs prevalent in the community, and the resources available for successful implementation.

- Offer prevention activities and services that extend beyond the school day--for example, safe, drug-free recreational activities, student assistance programs, or referrals to community mental health providers--to meet the needs of students and their families.

- Assess the effects of school prevention programs on students' knowledge of, attitudes toward, and use of alcohol, tobacco, and other drugs, as well as on related indicators of school climate such as use of student and employee assistance programs, disciplinary problems, and students' academic performance.

Implementing and monitoring a comprehensive, communitywide drug prevention is a long-term process. Even though the prevalence of alcohol and other drug use is declining, schools and communities must continue to provide high-quality prevention programs in order to keep the use of drugs to a minimum and to assure that schools provide a safe, drug-free environment conducive to learning.

Suggested Reading List

TRENDS IN DRUG USE

Gayle, Helene, and Lawrence J. D'Angelo. 1990. "Epidemiology of AIDS and HIV Infection in Adolescents." In Pediatric AIDS: The Challenge of HIV Infection in Infants, Children, and Adolescents. Baltimore: Williams & Wilkins. This article discusses knowledge, attitudes, beliefs, and behavior that place adolescents at risk for HIV infection, and provides epidemiological data on persons with AIDS between the ages of 13 and 24.

Johnston, Lloyd, Jerald G. Bachman, and Patrick M. O'Malley. 1991. Monitoring the Future: A Continuing Study of the Lifestyles and Values of Youth. Ann Arbor: University of Michigan Institute for Social Research. This study provides annual data on alcohol, tobacco, and other drug use by a nationally representative sample of high school seniors in the United State. Trend data are available on successive graduating classes since 1975; follow-up data are collected from college students from previous graduating classes since 1980.

National Committee for the Prevention of Child Abuse. 1991. Current Trends in Child Abuse Reporting and Fatalities. Chicago: n.p. This report describes the extent of child abuse in the United State.

National Institute of Justice (NIJ). 1991. Drug Use Forecasting 1990 Annual Report. Washington, DC: NIJ. This report summarizes data on drug use by juvenile and adult arrestees.

U.S. Department of Health and Human Service (DHHS). Alcohol Topics: Fact Sheet, Alcohol and Youth. The Fact Sheet summarizes information about alcohol consumption by youths gathered from several studies sponsored by the Department of Health and Human Services.

_____. 1991. Drug Use Among Youth: Findings from the 1988 National Household Survey on Drug Abuse. ADM 91-1765. Washington, DC: DHHS. This report provides data on alcohol, tobacco, and other drug use by youth between the ages of 12 and 17. Topics include trends in use from 1972 to 1988; correlates of use, frequency and level of use, patterns of use; and problems and perceived risks associated with drug use.

RISK FACTORS FOR DRUG ABUSE

Hawkins, J. David, et al. 1987. "Delinquents and Drugs: What the Evidence Suggests about Prevention and Treatment Programming." In Youth at High Risk for Substance Abuse. ADM 87-1537. Rockville, MD: National Institute on Drug Abuse. This publication includes papers that address the prevention needs of special populations (children of substance abusers, delinquents, children in foster care, runaways).

_____. 1986. "Childhood Predictors of Adolescent Substance Abuse: Toward an Empirically Grounded Theory" in Childhood and Chemical Abuse. Binghamton, NY: Haworth Press.
This article reviews the etiology of chemical use and abuse among children and adolescents and describes states the etiological pathways of youth drug behavior between initial, occasional, and regular use. The authors also discuss determinants of the onset of drug use.

Jones, C., and R.J. Battjes. 1985. Etiology of Drug Abuse: Implications for Prevention. ADM 87-1335, Rockville, MD: National Institute on Drug Abuse. This collection of papers identifies risk factors during childhood, the transition to adolescence, and the transition to young adulthood and suggests ways to incorporate research findings on etiology into prevention programming.

Kandel, Denise B, and Kazuo Yamaguchi. 1985. "Developmental Patterns of the Use of Legal, Illegal, and Medically Prescribed Psychotropic Drug from Adolescence to Young Adulthood." In Etiology of Drug Abuse: Implications for Prevention. ADM 87-1335, Rockville, MD: National Institute on Drug Abuse. This paper describes findings from a longitudinal study of the onset of alcohol and other drug use by teenagers and young adults.

Kumpfer, Karol L. 1989. "Prevention of Alcohol and Drug Abuse: A Critical Review of Risk Factors and Prevention Strategies." In Prevention of Mental Disorders, Alcohol and Other Drug Use in Children and Adolescents. ADM 90-1646. Rockville, MD: Office of Substance Abuse Prevention. This paper discusses biological and environmental (family, school, and community) factors that place children at risk for drug abuse and reviews prevention strategies commonly used today, particularly, early intervention and remediation services.

Moskowitz, J.M. 1989. "The Primary Prevention of Alcohol Problems: A Critical Review of the Research Literature. Journal of Studies in Alcohol 50:54-88. Moskowitz critically reviews research evaluating the effects of programs and policies in reducing the incidence of alcohol problems and examines four types of preventive interventions: (1) policies affecting the physical economic and social availability of alcohol, such as minimal drinking age, price, and advertising of alcohol; (2) formal social controls on alcohol-related behavior; (3) primary prevention programs; and (4) environmental safety measures, such as automobile air bags.

Segal, Bernard, ed. 1989. Perspectives on Adolescent Drug Abuse. Binghamton, NY: Haworth Press. Included in this monograph are papers on drug use and prevention programs for special populations (American Indians, Latinos), the initiation of drug use by adolescents, and the effectiveness of school-based prevention programs.

U.S. Department of Health and Human Service (DHHS), 1991. Drug Abuse and Drug Abuse Research: The Third Triennial Report to Congress. Washington, DC: DHHS. This report summarizes the extent of drug abuse in the United States, its health implications, and recent advances in the prevention and treatment of drug dependency.

EFFECTIVENESS OF PREVENTION PROGRAMS

DuPont, Robert L., ed. 1989. Stopping Alcohol and Other Drug Use Before It Starts: The Future of Prevention. Washington, DC: U.S. Department of Health and Human Services. This publication summarizes the rapidly growing body of knowledge about how drug use begin and about how to stop it, especially among youth from high-risk environments.

Ellickson, Phyllis L., and Robert M. Bell. 1990. "Drug Prevention in Junior High: A Multi-Site Longitudinal Test." Science 247 March 16: 1299-1305. This paper describes findings from a longitudinal study of junior high students' use of cigarettes and marijuana. The students were exposed to a curriculum based on the social-influence model of prevention. The program, which had positive results for both low- and high-risk students, was equally successful in schools with high and low minority enrollments.

Hansen, William B. 1990. "School-Based Substance Abuse Prevention: A Review of the State of the Art in Curriculum, 1980-1990." Paper prepared for the National Institute on Drug Abuse, October. This paper reviews research reports that base assessment of program effectiveness on program content and uses the consistency of findings within program content groups as a measure of the extent to which programs are promising.

Pentz, Mary Ann, et al. 1989. "A Multi-Community Trial for Primary Prevention of Adolescent Drug Abuse: Effects on Drug Use Prevalence." Journal of the American Medical Association
261 (22): 3259-66. This article describes a study of the first two years of Project STAR, a community-wide program to prevent use of cigarettes, alcohol, and marijuana in Kansas City, Missouri; the project includes mass-media programming, a school-based curricular intervention, and parent education.

Swisher, John D., and T.W. Hu. 1988. "Alternatives to Drug Abuse: Some Are and Some Are Not" in Preventing Adolescent Drug Abuse: Intervention Strategies. Washington, DC: National Institute on Drug Abuse. The authors review research on alternatives to substance abuse as a prevention strategy and cite research to support the hypothesis that some alternatives minimize drug abuse, whereas some contribute to the use of various substances.

Tobler, Nancy S. In press. "Drug Prevention Programs Can Work: Research Findings." Journal of Addictive Diseases. This article discusses the nature and content of successful adolescent drug prevention programs and considers these programs in conjunction with the developmental stages of adolescence and the current etiology of adolescent drug abuse.

U.S. Department of Education. In press. Promising Drug Prevention Programs: An Interim Report to Congress. Washington, DC. This report describes and discusses promising school- and community-based programs to prevent drug use by youth; it focuses particularly on the quality of evaluations conducted for 24 prevention programs.

U.S. Department of Education. 1987. Report to Congress and the White House on the Nature and Effectiveness of Federal, State, and Local Drug Prevention/Education Programs. This report summarizes the state of prevention research as of 1987 and recommends the development of communitywide school-based prevention programs.

OTHER PUBLICATIONS

National Commission on Drug-Free Schools. 1990. Toward a Drug-Free Generation: A Nation's Responsibility. This report outlines the goals for achieving drug-free schools and communities by the year 2000 and gives examples of promising drug prevention programs and activities.

U.S. Department of Education. 1990. Learning to Live Drug Free: A Curriculum for Prevention.
This curriculum model, which infuses prevention education throughout the K-12 curriculum, provides lessons, activities, background information for teachers, and suggestions for getting parents and the community involved in drug prevention.

_____. **1989. (revised edition)** **What Works: Schools Without Drugs.** This handbook was designed to help schools and communities develop comprehensive program to prevention drug and alcohol abuse. This publication is also available in Spanish.

U.S. Department of Health and Human Services. 1991. **Healthy People: National Health Promotion and Disease Prevention Objectives**. **PHS 91-50212**. This document contains a national strategy for significantly improving the health of people of all ages in the Unite State by preventing of chronic illnesses, injuries, infection diseases, and drug, alcohol, and tobacco use.

_____. **1990.** **Prevention Research Findings: 1988. ADM 89-1615.** This publication is an overview of research on many prevention issues including prevention research, school and community prevention programs, the relationship between drug prevention and health promotion programs, and the role of public policy in prevention.

Examples of Promising Projects

The Midwestern Prevention Research Project (Project STAR), Kansas City, Missouri

Purpose: To prevent the use of cigarettes, alcohol, and marijuana by adolescents through a comprehensive, school-based program with community outreach .

Description: The Midwestern Prevention Project, also called Project STAR (Students Taught Awareness and Resistance), is a research-based program that features a 10-session youth education program of skills training for resistance to drug use, 10 homework sessions involving active interviews and role-plays with parents and family members, and mass media coverage. The youth education program takes place in science or health education classes and includes topics and methods that prior research has suggested might be effective in reducing drug use. Topics include psychosocial consequences of drug use; correction of beliefs about the prevalence of drug use; recognition and counteraction of adult, media, and community influences on drug use; assertiveness training; strategies for handling difficult situations that involve potential drug use; peer resistance training; and public commitments to avoid drug use.

Through students' homework assignments, parents are encouraged to improve communication and to set firm rules against use of alcohol and other drugs. The mass media are enlisted to increase general community awareness of and participation in prevention activities. As attitudes changes, public policies are changed to support them.

Why It is Promising: This program uses all components of the community--schools, parents, the media, and community groups--that can contribute to changing the social norms for drug use and providing a healthy drug-free environment for all people. A similar project has been implemented in Indianapolis under the name I-STAR.

Costs: The Ewing Marion Kauffman Foundation has contributed $3 million to fund Project STAR over the past seven years. Marion Merrell Dow Inc., has contributed an addition $1 million in support services. The National Institute on Drug Abuse funds evaluation through a grant of $850,000.

Evaluation: A longitudinal evaluation of Project STAR found a reduced rate of increase in the prevalence for alcohol, marijuana, and cigarette use, representing a delay in the onset of drug use. Findings did not vary by race, urbanicity, or socioeconomic status. However, schools that participated in the study were not randomly selected. The assessment of I-STAR, designed to test the effectiveness and replicability of Project STAR more rigorously, does use an experimental design with random assignment of schools.

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(816) 966-3602

Mary Ann Pentz
Institute for Prevention Research
University of Southern California
Alhambra, CA 91803
(818) 457-4062

Washington Middle School, Albuquerque, New Mexico

Purpose: To get parents and the community involved in a school-based prevention program.

Description: Washington Middle School has an enrollment of 849 students, 93 percent of whom come from low-income families. The school, which had been plagued with gang and drug problems adopted a strict disciplinary policy to create and maintain a safe environment within the school. Faculty quickly saw, however, that they needed the involvement of parents in order to help change students' behavior. The school obtained several small grants to add a portable classroom so that another room close to the office could be used as a Parent Center, to hire a bilingual coordinator to staff the Parent Center, and to pay taxi fares for parents who lacked transportation to come to school. Parents use the center as a place to wait while picking up their children and to talk with the parent coordinator. The center also offers parenting classes, English lessons, counseling for recent immigrants, and information about the school, including its drug programs. The center helps establish a sense of community among school parents, and between families and school staff. The center attracts fathers and mothers as well as grandparents and others who share responsibility for children.

Washington Middle School also has developed a partnership with the University of New Mexico, which sends volunteer physicians once a week to check students identified by the school nurse needing special medical attention. Parents are notified of the referral and invited to attend the free examination. Once a visiting physician makes a diagnosis, the child is treated or referred to a specialist. The school helps parents who are unable to pay for a specialist find resources among local social agencies. An alcohol/drug specialist from the university also trains teachers who lead student support groups.

Why It is Promising: Washington Middle School offers an excellent program of parent involvement combined with effective community outreach.

Costs: A one-time grant of $30,000 from the school district paid for the portable classroom. The parent coordinator's salary of $10,500 also is paid for by the district. Other costs, such as supplies, maintenance, and electricity, are paid for by the school.

Contact: Mary Mercadl
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1101 Park SW
Albuquerque, NM 87102
(505)764-2000

Natrona County School District, Casper, Wyoming

Purpose: To develop a mentor team that can offer in-service training for school personnel who provide drug education to students, and thereby cut the cost of training staff.

Description: Natrona County School District offers three levels of training in drug and alcohol prevention to school and community personnel: (1) a basic information course which lasts 15 hours;

(2) a basic facilitator's training course, which takes 40 hours, and; (3) an advanced facilitator's training course, which is also offered for 40 hours.

These training sessions are available to all school staff on a volunteer basis during school hours, after school, evening, and weekends. Teachers are trained in the curriculum for their grade level, but they also receive an overview of information for other grades at the elementary, junior high school, and high school levels. This training helps teachers to integrate the curriculum across grades. The training is also open to the general community including law enforcement personnel, religious leaders, parents, and representatives of community agencies. The instruction is free for both community participants and school staff.

Initially, a consultant was hired to teach the basic information course and the basic facilitator course for school personnel. In an attempt to cut costs, the district later formed a mentor team composed of six school staff members who had an interest in alcohol and other drug prevention and who had specific skills to contribute. The consultant then trained these six members, each of whom made a two-year commitment, to teach the basic information course and the basic facilitator course. Mentors were trained by observing the consultant conduct the training, then by teaching with the consultant, and finally by teaching the course while being observed by the consultant. The mentor team is called on regularly for in-service training, and two new members recently joined the original team.

Why It Is Promising: Development of a mentor team has proved to be a cost-effective method for offering alcohol and other drug prevention training to staff. In addition, the district offers participation incentives in the form of college credit that can be used toward salary increases, public recognition at award luncheons, and the opportunity to attend professional conferences related to drug prevention.

Costs: Four one-week training sessions were held last year for an estimated cost of $10,000 to $15,000--about half the cost of training before formation of the mentor team.

Evaluation: More than 445 school staff members, 60 percent of the total staff, have participated in one or more of these workshops since they were first offered. Some 32 percent of district personnel have attended the basic information course, 43 percent have attended the basic facilitator course, and 16 percent have attended the advanced facilitator course. This system of peer training gives the mentor team a grass-roots approach that participants appreciate.

Contact: Delores O'Dell
Natrona County School District
970 N. Glenn Road
Casper, WY 82601
(307)577-0233

Southfield High School (SHS) Student Assistance Program, Southfield, Michigan

Purpose: To provide broad-ranging assistance to students throughout the school year.

Description: Southfield High School's Student Assistance Program includes a strong system of student support groups, staff training, parent involvement, and peer training. The program operates

throughout the school year, with limited services during holidays and summer vacation. Regular offerings include the following:

- Insight, a structured 10-session course on the effects of using alcohol and other drugs; attendance is voluntary for students who participate at their own request and mandatory for students referred for disciplinary reasons.

- Concerned Persons, for students concerned about family or friends who are involved with alcohol or other drugs.

- The One-to-One Program, which pairs a student with a staff member, whose responsibilities range from tutoring to listening. Staff members volunteer for the program, and students are referred by counselors, teachers, staff, other students, or themselves. Students meet with their staff member at least once a week.

Other activities available include aftercare/sobriety support, for students in recovery; grief and loss, for students who have experienced or are undergoing a loss of some kind; divorce/separation, for students experiencing the breakup of their family; smoking awareness, a structured five-week course for students to learn about the effects of tobacco use; facilitators' support, a biweekly support group for adults who are helping to lead student support groups; and suicide intervention team, six trained staff members who work with students who have either attempted or contemplated suicide.

The Positive Peer Influence (PPI) program developed at Southfield High School is a year-long course open to selected students in grades 10-12. Students earn 1/2 elective credit per semester. Approximately 10 students are in each PPI group, which meets every day during one class period. PPI students are trained to offer support to any student in the school who needs assistance, including new students. Although PPI is targeted at youth, parents also can use the service to resolve conflicts with their children; PPI students discuss the conflict and make recommendations to the parents.

Why Is It Promising: The student support services in Southfield High School are fully developed, comprehensive, and integrated into the life of the school in classes for English as a second language and special education classes as well as mainstream classes. The services include extensive training for all support group facilitators, and drug and alcohol prevention and early intervention services. Approximately 200 students, many of whom refer themselves, participate in support groups. The Southfield program is affiliated with the Michigan Association of Student Assistance Specialists.

Costs: The cost of staff time, the principal expense in Southfield's program, is approximately $65,000 per year and is paid for by the school district. Operating costs for materials, supplies, and other items amount to several hundred dollars each year and are paid for by the school.

Evaluation: Students report that the groups provide a safe environment in which to discuss their problems with peers and adults. An evaluation was begun in the 1990-91 school year to measure change in students' attitudes and behaviors, but the findings are not yet available.

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Student Assistance Program Coordinator
Southfield High School
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Southfield, MI 48034

(313)746-8618

Ken Wilson
Principal, Southfield High School
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(313) 746-8601

Clinch-Powell Educational Cooperative, Tazewell, Tennessee

Purpose: To provide early intervention services to at-risk children at the elementary-school level through a mentor program.

Description: Clinch-Powell Educational Cooperative is a nonprofit organization developed by four economically depressed Tennessee counties to pool their resources and provide a broader range of services to students. Among the services available in all four counties is the PAL (Partners at Learning) Program, a mentor program aimed at reducing school dropout rates and alcohol and other drug use by providing emotional support to students at the elementary-school level. Teachers select students for the program on the basis of factors such as poor attendance, hygiene, and grades.

All school staff members are eligible to participate as PALS. In order to protect the confidentiality of the students and to facilitate incorporating the support and encouragement toward positive behavior into each child's daily routine, no one outside the school is involved in the program. Adult PALs are not identified as mentors, and the students with whom they are paired are not identified as special program participants. Children know only that they have a "special friend" at school who is available to help them with problems or to talk with them.

PALs training, which is given in three or four sessions, includes an orientation to the program and a specific description of the goals and objectives. Periodic follow-up meetings also are held. Adult PALs often contact their students daily, and they keep a monthly log that documents the activity during the contact such as eating lunch together, giving birthday presents, or providing encouragement or incentives.

Why Is It Promising: The PAL Program is a means of focusing teacher and staff attention on helping students. Administrators believe that students show more interest in school and are happier to be there. Teachers notice strengths of PAL students such as artistic or athletic abilities, which were not recognized before the program. Participants also believe that trust between teachers and students has increased.

Evaluation: One control group was identified in each of the four participating counties. Comparisons for 1988-89 and 1989-90 show a 58 percent improvement in attendance for PAL students compared with a 27 percent average improvement in the four-county area. A smaller study within one school found that PAL students showed greater improvement in attendance and in mathematics and reading test scores than nonparticipating students in the same classes.

Costs: Clinch-Powell Educational Cooperative received a grant of $87,000 in 1989 to develop and implement the mentor project over an 18-month period.

Contact: Dwight Snodgrass
Clinch-Powell Educational Cooperative
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Tazewell, TN 37879
(615) 626-4677

Greenbelt Center Elementary School, Greenbelt, Maryland

Purpose: To provide a safe, drug-free environment for at-risk students through an after-school alternative program.

Description: Greenbelt Center Elementary School is located in Greenbelt, Maryland, a blue collar community approximately 10 miles from the District of Columbia. Forty percent of the school's students are bused from Washington Heights, a federally subsidized housing complex in Landover, Maryland, described by county police as the "hottest" area for drug abuse and trafficking in Prince George's County. Some students witnessed a drug-related murder on the playground of their housing complex, other drug-related violence is commonplace, and many of the students come from homes where parents and close relatives are involved with drugs.

The violent surroundings in which these children live make them virtual prisoners in their homes; they leave only to go to school each day. In response to the needs of these students, a Drug Education Committee was formed at Greenbelt Center. The committee used the services of the Division of Pupil Services and the county guidance office to identify public and private resources to help. From these meetings, a four-point approach was developed:

1. Eight weekly in-service programs were held to inform teachers about drugs and give them skills to help the children.

2. Private mental health agencies agreed to hold a series of small-group discussions with teachers every other week in order to support the teachers and help them develop strategies to help their students.

3. Small-group counseling was offered for students facing trauma.

4. An after-school program was developed that offered intensive language and skills development, family counseling, drug prevention education, and enrichment activities from 3 to 6 p.m. each school day.

The after-school program, which enrolls 190 students, employs paid staff as well as community volunteers and graduate students from the University of Maryland. An elementary instructional assistant oversees the program and provides coordination with the elementary school. The program is open to all students at no cost. Participating students from Washington Heights are bused directly to their doors at the end of the day, because of the danger they would face walking through their housing complex.

Why It Is Promising: The program offers a model of community coordination and outreach in order to provide a safe, drug-free environment for students; it has been replicated in three other elementary

schools in the county. The school involves parents from Washington Heights in the life of the school by holding an open house at the rental office and by scheduling parent-teacher conferences at the housing complex.

Costs: Initial funding for the after-school program was supplied by a $50,000 grant from the county and a $75,000 grant from the Casey Foundation.

Evaluation: Analysis of attendance records shows that students participating in the after-school program have a school attendance record that is marginally higher than the record for nonparticipating students. In addition, criterion reference test scores for reading and math in 1991 rose 30 percent for after-school program participants compared with an increase of 18 to 20 percent for other students.

Contact: John Van Schoonhoven
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15 Crescent Road
Greenbelt, MD 20770
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Sources of Further Information

National Clearinghouse for Alcohol and Drug Information
Box 2345
Rockville, MD 20852
1-800-SAY-NOTO

NCADI is a federally funded drug information clearinghouse supported by the U.S. Department of Health and Human Services and the U.S. Department of Education. Antidrug materials from federal agencies are available free of charge.

National PTA Drug and Alcohol Abuse Prevention Project
700 North Rush Street
Chicago, IL 60611
1-800-225-5483

An information kit, featuring a 15-minute video and brochure on drugs, is available from the National Parent-Teacher Association.

National Federation of Parents for Drug-Free Youth, Inc.
Communications Center
1423 North Jefferson
Springfield, MO 65802
(314) 968-1322

This national organization helps parent groups get started and publishes a newsletter, legislative updates, and resource lists for them.

American Council for Drug Education
204 Monroe Street
Rockville, MD 20850
(301) 294-0600

ACDE organizes conferences, develops media campaigns, reviews scientific findings, and publishes books, a quarterly newsletter, and education kits for selected audiences.

Just Say No Clubs
1777 North California Boulevard
Suite 200
Walnut Creek, CA 94596
1-800-258-2766

These clubs, organized in schools throughout the nation, provide support and positive peer reinforcement to young people through workshops, seminars, newsletters and other activities.

Hazelden Foundation
Pleasant Valley Road
P.O. Box 176
Center City, MN 50012-0176
1-800-328-9000

This foundation publishes pamphlets and books on drug abuse and alcoholism, and curriculum materials for drug prevention.

Regional Centers for Drug-Free Schools and Communities

- **Northeast Regional Center**
  12 Overton Avenue
  Sayville, NY 11782
  (516) 589-7022

- **Southeast Regional Center**
  Spencerian Office Plaza
  University of Louisville
  Louisville, KY 40292
  (502)588-0052

- **Midwest Regional Center**
  1900 Spring Road
  Oak Brook, IL 60521
  (708) 571-4710

- **Southwest Regional Center**
  The University of Oklahoma
  555 Constitution, Suite 138
  Norman, OK 73037-0005
  (405) 325-1711

- **Western Regional Center**
  101 Southwest Main Street, Suite 500
  Portland, OR 97204
  (503) 275-9489

Regional centers, supported by the U.S. Department of Education, provide technical assistance to schools and communities to help them assess drug-related problems, develop training programs, evaluate prevention programs, and coordinate and strengthen antidrug policies and programs in schools.